FIFTY-NINTH

ANNUAL MEETING

OF THE

American Institute of Instruction,

LECTURES, DISCUSSIONS AND PROCEEDINGS,

NEWPORT, R. I., JULY 9-13, 1888.

PUBLISHED BY ORDER OF THE BOARD OF DIRECTORS.

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AMERICAN INSTITUTE OF INSTRUCTION.

Fifty-Ninth Annual Meeting,

JULY 9, 10, 11, 12 AND 13, 1888.

JOURNAL OF PROCEEDINGS.

FIRST DAY.—MONDAY, JULY 9.

The fifty-ninth annual meeting of the American Institute of Instruction opened Monday evening, July 9, 1888, at Newport, R. I., J. Milton Hall, of Providence, President.

At 7 o'clock, P. M., a meeting of the Board of Directors was held at the Ocean House, the head-quarters of the Institute.

At 7:30 P. M., a concert was given in Music Hall, the audience room of the Institute, by the full band of the U. S. Steamship "New Hampshire," Mr. McQuown, leader. A large audience assembled.

At 8 P. M., the regular exercises of the session began. President Hall called the Institute to order, and prayer was offered by the Rev. E. P. Tuller, of Newport, pastor of the First Baptist Church.

Professor R. G. Hibbard, of New Britain, Conn., was then introduced by President Hall, and gave the

Institute an expressive rendering of Drake's "The American Boy."

His Honor, John Hare Powel, Mayor of Newport, delivered the following address of welcome to the Institute on the part of the city of Newport:

Mr. President, Ladies and Gentlemen:—I appear before you to-night, not on account of any aptitude, or fitness of my own for the position of the person to whom the honor and pleasure of welcoming your distinguished association to the shores of this island either belongs or is due, but, simply, because I have been delegated by my associates for the discharge of that pleasing duty—by virtue of the position which I happen, temporarily, to fill as representing this city on the Joint Committee placed in charge of the arrangements for your visit to this place.

I most sincerely wish that the honor of addressing you had fallen on the shoulders of a man more capable of putting into words *all I* would like to express at this time, but I earnestly hope that my intention and desire to say *all* that is fitting may be taken for the *deed*, and that my short comings as a speaker may be overlooked.

In any event, I do not imagine that much is expected, or is to be desired from me, in the way of oratory, and standing, as I do here, in the presence of so many trained and experienced speakers, I should be bold indeed, with my inexperience in forensic matters, did I attempt any flights of oratory, even were I capable of attempting them, for I should, undoubtedly only make a most signal failure of the effort.

My only duty here is to extend a welcome to the American Institute of Instruction, and when I reflect on the significance and paramount importance of the work of the members of that organization, of the potent and far-reaching influence on the rising generation, and the effect on the future well being of this great nation, through the youth entrusted to the fostering care of its members; and when I remember the trite and most true saying of Lord Bacon, who said "The end of *all* learning is to the good of mankind," I should be, as, most assuredly, *I am*, happy to welcome to our midst so notable an

assemblage of instructors—men and women who devote their lives, talents and energies to raise the standard of human knowledge and intelligence—however unsuccessful I may be in expressing myself in appropriate terms.

I trust, Mr. President, that you and all the members of the Institute may derive pleasure from this visit to our city—instruction and profit you cannot fail to acquire from the deliberations and interchange of thought in your meetings—and I will close by wishing you, Sir, and through you every member of the Association of which you are the head, most sincerely and heartily welcome to the shores of Aquidneck Island, both in the name of the City of Newport and of the Joint Committee of which I have the honor to be chairman—and, further, to venture to express a hope that your visit to our city may be fraught with sufficient pleasant memories for all to carry to their widely scattered homes to cause Newport to be remembered with kindly feelings, and to foster a desire on the part of the Association to revisit a place where it is not only *thrice* welcome, but gives pleasure by its presence.

Again, Mr. President, I extend to you, and through you, Sir, to the American Institute of Instruction, a most sincere and hearty welcome to the City of Newport.

President Hall made response for the Institute as follows:

In response, Mr. Mayor, to your kind greeting and hearty welcome, permit me to express to you personally, to the members of your local committee, and to the citizens of this historic and hospitable city the sincere thanks of the American Institute of Instruction, which I have the honor to represent.

In the older states of the Union, public education did not begin with the existence of the commonwealth and under its control and fostering care, as is the case in the newer members. In the former it began at the several centres of population and influence and gradually extended in all directions, until the radii of influence from these centres met, when it was found that while there was a unity of sentiment in regard to the education in the abstract, yet there was, combined with

that unity of sentiment, such a diversity of opinion in regard to methods and subjects, that a congress of those engaged in and most interested in the work seemed to be demanded.

It was in response to this demand that leading educational men of the times assembled in the city of Boston to discuss the situation and consult for the general good of the cause. When one studies the characters and the labors of those "fathers in the educational work of our country," as they have been styled, when he reflects upon the zeal, untiring perseverance and conscientious devotion to duty with which they wrought, and recognizes how fully their predictions, as well as their hopes and fears have been realized, he is inclined to say in those oft quoted words from Hyperion, "Every possible future is behind them. We cannot suppose that the time will ever arrive when the world, or any considerable part of it, will come up abreast of these great minds, so as to fully comprehend them."

The impetus which the cause of universal education received at the hands of those men and their successors is still active, and if not world-wide, is perceptibly felt throughout the whole length and breadth of our broad land. One result of that meeting was the organization of the association which begins its fifty-ninth annual session here to-night.

To the efforts of this association may be attributed the organization of State boards of education, the selection of state superintendents of public instruction, the more and more definite city and towns supervision of schools, the establishment of professional schools for teachers, the great improvement in methods of instruction, in school buildings, and many other matters of minor importance. In fact, there have been few if any advances along any part of the line of educational work which have not previously been presented, discussed and urged before and by this body.

Whether we, at this meeting, make any advance along the course marked out by our predecessors, we will leave for those who follow us to decide. As the rains and dews dissolve and disintegrate the solid rocks and carry them down to fertilize the valleys and render them capable of producing harvests for the physical good of man, so we hope that the rains and

dews of good advice, counsel and instruction which will here be given, may fall where their effects will be carried to the lecture-room and the class-room, and bear fruits for the mental good of the race.

But to hear and to witness all that may be said or done under this roof is not the sole object of this assembling at our "annual feast," nor should it be. The privilege of looking into the faces and of taking by the hand old friends, who with us are engaged in what we consider the noblest of human activities, the opportunities for interchange of thought, for "taking sweet counsel together," are not the least among the causes that combine to call us together.

Lastly, the attractions of your beautiful and famous city, this magnificent bay at the north, whose blue waters and lovely shores and islands have delighted all who have viewed them from the time of the first visit of the hardy Northmen to the present, the mighty Atlantic, rolling in all its majesty at the south, and purifying by contact with its billows the healthful breezes which are wafted from it over your fertile island; these, too, have had no small voice in calling us hither. To many among our number the sight of an apparently limitless expanse of water and the sound of the never-ceasing pulse of the ocean are not every day experiences; and the sea, like the mountains, symbolizes infinite and external power, and ever speaks to us of the source of that power.

The members of our association who were present at the meeting held in this place several years ago, have carried in their hearts most pleasant recollections of that joyous as well as profitable season, and when your zealous superintendent of schools, the ever-active friend of our Institute, extended to us, last winter, such a cordial invitation to meet again in the "City by the Sea," those pleasant remembrances, joined forces with his persuasive words and "carried us away captive."

We have come, therefore, anticipating much pleasure as well as profit, and with a full assurance that, through the kindness and the thoughtfulness of yourself and your associates, these anticipations will be realized.

HON. THOMAS B. STOCKWELL,

the State Commissioner of Schools of Rhode Island, then welcomed the Institute in behalf of the State, thus:

Mr. President and Members of the American Institute:

After the very cordial greeting which you have received at the hands of His Honor, the Mayor of Newport, I am sure that no other words are necessary to make you feel at home in Newport and the State of Rhode Island and the Providence Plantations. But as much as the State of Rhode Island respects, loves and cherishes her daughter by the sea, she is not altogether willing that she should usurp at such an hour as this all the glory, honor and pleasure to which the reception of such a body as this entitles the State. Therefore it is, Mr. President and friends, with great pleasure that I accept the invitation that has been given to me to express in brief words the welcome which the State of Rhode Island extends to you as you gather here for the fourth time within her extended borders.

One of the reasons why we are glad to welcome you here to-day, with open hands and open hearts, is because within these last few years we have given this Institute one, two, three, four of its Presidents, and we feel that having contributed so much to the guidance of its affairs and to the inspiration of its movements, we have a double claim to call the Institute back home again, as it were, that it may feel the warm pulse of those who believe in the principles which it has endeavored to establish in the more than half century of its existence. And pardon me, Mr. President, if I allude with bated breath to him, the first of the four above referred to, who has, during more than half a century of active, earnest work in the cause of education, proved his ability and his fidelity to the cause which you, sir, now champion, but who to-day lies upon probably his dying bed.

I refer to Dr. Merrick Lyon, whom so many of us have known in connection with the work of this Institute. We are very glad, Mr. President, to welcome you to this State on

account of the record that you bring of what you have accomplished for the cause of education. We know, sir, by experience of past years what an educational inspiration such a gathering as this proves to be to the community in which it is held, how it brings a new atmosphere of education, a pure ozone, as it were, which gives new life and vigor to all educational matters. It gives a new spirit, a new power and a new purpose. So the State of Rhode Island is glad to extend to you a cordial and a hearty welcome. One of the characteristics of our little commonwealth, as you, sir, know, is its individualism, and in behalf of the individual citizens of the State of Rhode Island I wish to assure you, friends, one and all, that each and every citizen of the State extends to you all, the right hand of welcome, and hopes you will enjoy all that is set before you. We bid you welcome to the only Narragansett Bay. *We* are glad that you have come, and we feel very sure that when you come to the close of this week, *you* will be glad that you came. [Applause.]

To this Mr. George A. Walton, of Newton, Mass., replied as follows:

Complying with your request, Mr. President, I have pleasure in responding to the cordial welcome extended to the American Institute of Instruction, by the Commissioner of Education of Rhode Island. My first connection with the American Institute dates back to 1845; since that time I have been a constant attendant upon its meetings, and for many years have been officially interested in their success.

From the first, Rhode Island and the American Institute have been intimately and pleasantly, as well as profitably, associated. Rhode Island has furnished the Institute with some of her most distinguished chief executive officers,—Presidents Wayland, Kingsbury, Greene, Lyon, Bicknell, Mowry, Hall,—all good men and true,—and some of them have come to the office when the Institute demanded faith and inspiration in its leaders. For there have been times when even this most beneficent institution has had a struggle for existence, when its friends were luke-warm, and its end seemed in sight. It has then remained for Rhode Island to

discover new lines of work for the Institute to enter upon, to point out the way, and lead to its achievement.

Though the name and fame of the Institute are national, its direct influence has been largely confined to New England. It received its charter from Massachusetts, and for years, was aided by appropriations from that State; its large membership is principally from New England.

It has yet to grapple with many educational problems. Some that are immediately pressing for solution, are: Shall industrial training be introduced into the common schools? Is it wise to furnish text books free to pupils?—under what conditions? What method shall be employed for the supervision of the schools? Shall supervision by public officials extend to private institutions? Shall not a radical change be made in our elementary courses of studies, making what are now the ends, to be the means of education? These, and many more questions yet to be answered are vital to the education of the whole country, some of them to New England in particular. The American Institute, as a New England institution, has but begun to make conquests, it has still its great work to do. The Institute has a memorable history. In making that history, Rhode Island has nobly done her part. The city of Newport ranks first in her former contributions. If she fulfills her promise—and no doubt she will—in her present she is destined to render herself and the State she adorns immortal in the annals of hospitable entertainment.

After these generous words of welcome from the City and from the State, the American Institute enters with renewed zeal upon the discussion of her annual budget, assured that in Rhode Island, at least, her efforts will be fully appreciated; and she promises on her part, to show by her spirit, that, whatever she may do or fail to do, she is honestly striving to master some of the many great educational problems of the day, and moreover that she has a deep sense of the obligation under which her members are placed in accepting the hospitalities so generously proffered by the citizens of Newport, the capital of this enterprising and intelligent State.

Professor Hibbard again entertained the audience with a felicitous recitation of George Lansing Taylor's "In the Maelstrom," a thrilling poem of adventure.

Mr. Edwin D. Mead of Boston then read a lecture on "The Importance of the Study of History."

At the close of the lecture, the Institute, by a rising vote, unanimously adopted the following

RESOLUTION:

Resolved, That we, the members of the American Institute of Instruction, by a rising vote, express our profound sympathy with our esteemed ex-President, Merrick Lyon, LL.D., as he lies upon his bed of sickness, unable to take his accustomed share in the duties and pleasures of the annual meeting.

The exercises of the evening closed with the rendering, by Professor Hibbard, of two humorous selections: Mark Twain's "Parental Advice" on fighting, and Robert J. Burdette's "The Strike at Hinman's," showing how the strikers were struck, with surprise, at least.

SECOND DAY.—Tuesday, July 10.

MORNING SESSION.

The assembling members of the Institute were entertained with piano solos by Mrs. A. T. Cowie, of Newport, who finely rendered Leybach's Fifth Nocturne, and Czibulka's Gavotte.

At 9:30 A. M., President Hall called the Institute to order.

The Rev. Mahlon Van Horne, pastor of one of the Congregational Churches of Newport, conducted the devotional exercises with reading of Scripture and with prayer.

The audience led by Mr. J. L. Frank, teacher of music in Newport, and accompanied on the piano by Mrs. Cowie, sang the familiar hymn, "America."

Mr. D. W. Jones, of Boston, Chairman of the Committee on Membership, reported a list already agreed upon for active membership under the new Constitution. The report was accepted and the nominees were declared elected active members of the Institute.

Mr. George A. Kimball, of Boston, delivered a lecture on the subject of "School-Room Ventilation," illustrating its points by blackboard drawings.

A discussion followed in which several gentlemen questioned the speaker and received replies.

President Hall then appointed the following Committee on Resolutions:

W. H. Lambert, Massachusetts,
B. G. Northrop, Connecticut,
L. H. Meader, Rhode Island,
C. H. Morse, New Hampshire,
A. F. Pease, Vermont.

Mr. William H. Lambert, Principal of the B. M. C. Durfee High School, Fall River, Mass., addressed the Institute upon the subject "English in the High School."

This topic was further discussed by Dr. J. G. Fitch, of London.

After the recess which was then taken, Professor

Hibbard gave a recitation of Southey's "The Cataract of Lodore."

President L. Clark Seelye, of Smith College, delivered an address on "Woman's Higher Education: Its Dangers and its Benefits."

The discussion of this subject was carefully considered and ably and thoroughly maintained. The participants were President J. M. Taylor of Vassar College, President George D. B. Pepper of Colby University (his paper being in his absence read by the Secretary, Mr. Huling), and Dr. J. G. Fitch, of London.

President Hall next appointed the Committee on Nominations, to present a list of officers of the Institute, namely:

James W. Patterson, New Hampshire,
A. M. Edwards, Maine,
William A. Mowry, Massachusetts,
D. W. Hoyt, Rhode Island,
J. H. Peck, Connecticut.

The Institute then adjourned till the evening session.

AFTERNOON.

During the afternoon, besides the opportunities for private excursions and parties, there was offered a general opportunity to visit, by free conveyance, the U. S. Training Station and Ship "New Hampshire," through the courtesy of the commandant Captain F. J. Higginson, and witness gymnastic exercises, a dress parade, and other features of interest, and listen to concert music by the ship's band. The

Institute accepted the invitation with great satisfaction and pleasure, and fully enjoyed the excursion.

The government of the Casino, also, threw open that delightful resort to the free inspection of the members of the Institute, to whom its courts and promenades and music furnished a source of charming entertainment.

EVENING SESSION.

From 7:30 to 8 o'clock, the Fourth United States Artillery Band from Fort Adams discoursed sweet strains, while the audience assembled. At 8 o'clock President Hall called the Institute to order.

The fine quartette choir of the United Congregational Church of Newport,—Miss Coggeshall, Mrs. Smith, Mr. Seabury, and Mr. Smith,—with piano accompaniment by Mr. C. P. Scott, sang Keller's "American Hymn," and J. L. Hatton's "I Met Her in the Quiet Lane."

Mr. Hezekiah Butterworth of Boston, editor and author, read a lecture on "Early Inspirations."

The choir then sang Barnaby's "Phœbus," and Sullivan's "O, Hush Thee, My Baby."

Adjourned.

THIRD DAY.—Wednesday, July 11.

MORNING SESSION.

At 9:30, A. M., President Hall called the meeting to order.

The Rev. W. R. Alger led the devotional exercises with reading of Psalms and prayer.

The Institute, under the leadership of Mr. Frank and with the accompaniment of Mrs. Cowie, united in singing to the tune "Old Hundred," the hymn beginning:

"Great God of Nations, now to Thee."

Mr. D. W. Jones, of Boston, Chairman of the Committee on Membership, reported an additional list of members. The report was accepted and the nominees declared duly elected active members of the Institute.

Miss W. Bertha Hintz, of the Boston Normal School, then addressed the Institute upon the subject: "Illustrative Blackboard Drawing." As the lecturer proceeded, she illustrated not only her excellent lecture, but also the methods of work she was recommending. She sketched upon the blackboard uninterruptedly, and her graphic illustrations were pictures of the objects which should form the material of the school lesson. Copies of her drawings would be needed to represent in this record the lecture in its completeness.

The lecture of Prof. A. E. Dolbear, of Tufts College, Mass., followed. His subject was "Recent Advances in Electrical Science."

Dr. J. G. Fitch, Her Majesty's Chief Inspector of Training Colleges, London, Eng., then delivered an address on the "Evolution of Character."

The subject of Dr. Fitch's address was continued by Dr. Thomas Chase, late President of Haverford College.

The Institute then adjourned until the evening session.

AFTERNOON.

During the afternoon, the courteous invitation of Colonel Closson, commandant of the U. S. Fort Adams, was generally accepted by the members of the Institute, and a visit was made to the Fort. Conveyances were free and abundant, the steam launch of the Fort making frequent trips and the ferry-boat Conanicut being at the service of the Institute. The visitors were treated to a concert by the Artillery Band and to a field drill of the mounted Light Battery. Ample leisure was given to inspect the fortifications and grounds of Fort Adams.

EVENING SESSION.

At 7:30, P. M., the Institute was entertained at Music Hall by a concert given by Mr. C. N. Allen's Ocean House Orchestra.

At 8 o'clock, the Institute was called to order by President Hall.

Prof. J. L. Frank, teacher of music in Newport, then contributed to the pleasure of the evening by singing a bass solo.

Hon. James W. Patterson, State Superintendent of Public Instruction, New Hampshire, delivered an address on "A Trip among the Glaciers," illustrating leading points by the use of charts.

Miss Pamela A. Fry then favored the Institute with a soprano solo; and the Institute adjourned.

FOURTH DAY.—THURSDAY, JULY 12.

MORNING SESSION.

At 9:30, A. M., President Hall called the Institute to order.

Prior to the opening, as on all the preceding days, Mrs. A. T. Cowie had agreeably entertained the members of the Institute with her excellent renderings of music from the piano.

Scripture was read and prayer offered by the Rev. Charles G. Gilliat, rector of St. George's Church, Newport, and the Institute joined in the "Italian Hymn," Mr. Frank leading and Mrs. Cowie accompanying.

Mr. D. W. Jones, of Boston, Chairman of the Committee on Membership, reported a second additional list of active members. The report was accepted and the nominees were declared duly elected active members of the Institute.

On motion of Mr. J. F. Blackinton, of Boston, J. G. Fitch, LL.D., Her Majesty's Chief Inspector of Training Colleges, London, England, was made by unanimous choice an honorary member of the American Institute of Instruction.

Mr. J. B. Sharland, Instructor in Music in the Boston Public Schools, delivered a lecture on "Vocal Music as a Branch of Common School Instruction." Mr. Sharland illustrated, by exercises with a class of Newport pupils, the salient points of his address.

Hon. James W. Patterson, of New Hampshire, Chairman of the Committee on Nomination, reported

the selection of that Committee for the Officers of the Institute to be:

President—George A. Littlefield, Newport, R. I.
Secretary—Ray Greene Huling, New Bedford, Mass.
Assistant Secretary—Augustus D. Small, Boston, Mass.
Treasurer—James W. Webster, Malden, Mass.
Assistant Treasurer—Henry Whittemore, Waltham, Mass.

Vice-Presidents—MAINE.

O. W. Cook, Fremont.
W. J. Corthell, Gorham.
A. M. Edwards, Lewiston.
G. B. Files, Augusta.
R. E. Gould, Biddeford.
Jas. H. Hanson, Waterville.
Jere. M. Hill, Bangor.
Mary E. Hughes, Castine.
L. G. Jordan, Lewiston.
G. C. Purrington, Farmington.
A. F. Richardson, Fryeburg.
E. P. Sampson, Saco.
N. A. Sargent, Hebron.
Thomas Tash, Portland.
C. A. Wardwell, Bath.
R. Woodbury, Castine.

NEW HAMPSHIRE.

Wm. H. Buck, Manchester.
C. H. Clark, Kingston.
Channing Folsom, Dover.
Amos Hadley, Concord.
L. S. Hastings, Claremont.
John K. Lord, Hanover.
D. G. Miller, Meriden.
Charles H. Morss, Portsmouth.
John Pickard, Portsmouth.
W.A. Robinson, Franklin Falls.
Charles C. Rounds, Plymouth.
L. J. Rundlett, Concord.
O. S. Williams, Nashua.
J. H. Willoughby, Nashua.

VERMONT.

M. H. Buckham, Burlington.
A. H. Campbell, Johnson.
Edward Conant, Randolph.
Justus Dartt, Springfield.
J. DeBore, Montpelier.
A. L. Hardy, St. Johnsbury.
S. W. Landon, Burlington.
Alvin F. Pease, St. Albans.

MASSACHUSETTS.

George I. Aldrich, Quincy.
Sarah J. Baker, Boston.
Eli A. Hubbard, Hatfield.
Ellen Hyde, Framingham.

Thos. M. Balliet, Springfield.
Jas. F. Blackinton, Boston.
Thos. W. Bicknell, Boston.
A. G. Boyden, Bridgewater.
I. N. Carleton, Bradford.
C. Goodwin Clark, Boston.
E. H. Davis, Chelsea.
John W. Dickinson, Newton.
Larkin Dunton, Boston.
W. E. Eaton, Reading.
A. W. Edson, Worcester.
Thomas Emerson, Newton,
Geo. T. Fletcher, Marlboro.
Homer T. Fuller, Worcester.
Arthur L. Goodrich, Salem.
E. J. Goodwin, Newton.
J. C. Greenough, Westfield.
Daniel B. Hagar, Salem.
Henry C. Hardon, Newton.
William T. Harris, Concord.
Daniel W. Jones, Boston.
Charles F. King, Boston.
Geo. H. Martin, Bridgewater.
Samuel W. Mason, Chelsea.
A. D. Mayo, Boston.
John O. Norris, Melrose.
Hiram Orcutt, Boston.
James A. Page, Boston.
Alice E. Freeman Palmer, Cambridge.
John T. Prince, Waltham.
Chas. P. Rugg, New Bedford.
J. G. Scott, Westfield.
Edwin P. Seaver, Newton.
Wm. E. Sheldon, Newton.
Elbridge Smith, Boston.
Admiral P. Stone, Springfield.
E. Norris Sullivan, Boston.
John Tetlow, Boston.
W. W. Waterman, Clinton.

RHODE ISLAND.

W. N. Ackley, Warren.
Geo. E. Church, Providence.
Sarah E. Doyle, Providence.
Albert Harkness, Providence.
E. H. Howard, Providence.
D. W. Hoyt, Providence.
Daniel Leach, Providence.
Merrick Lyon, Providence.
L. H. Meader, Providence.
Thos. J. Morgan, Providence.
Jos. E. Mowry, Providence.
J. M. Nye, Phenix.
Wm. T. Peck, Providence.
Levi W. Russell, Providence.
John P. Sanborn, Newport.
James M. Sawin, Providence.
T. B. Stockwell, Providence.
H. S. Tarbell, Providence.
W. E. Wilson, Providence.
C. L. Ames, Plainville.

CONNECTICUT.

Henry Barnard, Hartford.
F. F. Barrows, Hartford.
J. D. Bartley, Bridgeport.
J. A. Graves, Hartford.
H. M. Harrington, Bridgeport.

N. L. Bishop, Norwich.
D. N. Camp, New Britain.
L. L. Camp, New Britain.
C. F. Carroll, New Britain.
S. T. Dutton, New Haven.
C. D. Hine, Hartford.
Dwight Holbrook, Clinton.
Chas. Northend, New Britain.
B. G. Northrop, Clinton.
W. I. Twitchell, Hartford.

ELSEWHERE.

George J. Cummings, Washington, D. C.
John Eaton, Marietta, O.
W. S. Montgomery, Washington, D. C.
George Crosby Smith, Carmel, N. Y.
H. P. Warren, Albany, N. Y.

Councillors.

James S. Barrell, Cambridge, Mass.
Francis Cogswell, Cambridge, Mass.
M. Grant Daniell, Boston, Mass.
Joseph G. Edgerly, Fitchburg, Mass.
J. Milton Hall, Providence, R. I.
Frank A. Hill, Cambridge, Mass.
William H. Lambert, Fall River, Mass.
A. J. Manchester, Providence, R. I.
Albert P. Marble, Worcester, Mass.
William A. Mowry, Boston, Mass.
James W. Patterson, Hanover, N. H.
E. R. Ruggles, Hanover, N. H.
Homer B. Sprague, Grand Forks, Dak.
Benjamin F. Tweed, Cambridge, Mass.
George A. Walton, Newton, Mass.
A. E. Winship, Somerville, Mass.

On motion of Dr. A. P. Stone, of Springfield, the Secretary of the Institute, Mr. Huling, was authorized and instructed to cast the ballot of the Institute for the nominees of the Committee; and the officers nominated were declared duly elected officers of the

American Institute of Instruction for the ensuing year.

Mr. A. E. Winship, Editor of the Journal of Education of Boston, then addressed the Institute on "Genius and Circumstances in Education."

At the close of this lecture, the report of the Committee on Necrology was called for. In the absence of the Chairman, Dr. Merrick Lyon, now dangerously ill at his home in Providence, Mr. Thomas Tash of Portland introduced the report with pertinent remarks, and then called upon Mr. James S. Barrell of Cambridge, to speak in memory of Mr. Joshua Bates, and upon Mr. Ray Greene Huling, of New Bedford, for a tribute to the late Supt. H. F. Harrington. These and others contributed to the following

REPORT OF THE COMMITTEE ON NECROLOGY.

Mr. Tash, of Portland, reports for that committee as follows:

MR. PRESIDENT:—"The bearer of unpleasant tidings hath but a losing office;" that is the office of your Committee on Necrology to-day as always. It is especially sad for me to make this report to-day in place of Dr. Merrick Lyon, of Providence, the Chairman of this Committee, whose physical condition is the cause of his absence. His knowledge of the members of this Institute is such that he could speak exhaustively of the character and work of every prominent member.

We have the sad duty to present the names of two prominent educators, Master Joshua Bates of Boston, who died in June, 1888, and of Supt. Henry F. Harrington of New Bedford, who died in September, 1888.

We shall call upon Mr. Barrell, Master of the Harvard School of Cambridge, to give facts respecting Mr. Bates, Mr. Barrell to be followed by one or two Boston Masters.

JOSHUA BATES.

Mr. James S. Barrell, of Cambridgeport, Mass., introduced by Mr. Tash to speak to the memory of Mr. Bates, spoke as follows:

In 1844 he was made master of the Brimmer school in Boston and he served till 1876, when he resigned. From 1844 to 1876 in one school! He died the present year, in the month of June, I think. He was one who always manifested a deep interest in those of his own profession. He was ever ready to give encouragement and strength to the young men and young women of his profession. When boys and girls pass judgment as pupils upon their teachers, it is always incorrect; but when they come to the maturity of their powers and say of a teacher, "He was a noble man," or, "She was a noble woman," or, "I thank God that it was my privilege to be under the instruction of that man or woman," then we feel that there was something there that was grand and noble and that such a person is doing a work for which he may be thankful that he had an opportunity to do it. I am told that those who have been under Mr. Bates's care give such testimony of him. They are thankful that they have had an opportunity to be trained by such a man. In a distant graveyard lies an obscure grave. I visit it occasionally. Whenever I am in the vicinity I make it a point to go and look upon that tombstone and read the inscription. It is exceedingly simple and I never read it without getting new inspiration and strength for the work of life. It is an inscription on the grave of a man whom I knew while I was a boy and he often and often gave me advice. "He opened his mouth for the dumb and he plead the cause of the poor and needy." Blessed is the man who can have such an inscription on his tombstone. I believe Mr. Bates could have such an inscription. I hope some personal friend of Mr. Bates will say a word in relation to him.

Mr. J. F. Blackinton of East Boston.—Mr. President, I believe it was well understood that Mr. Page was to do this service. I am not prepared to speak for such a man, although I knew him for a long time, as all Boston teachers knew him,

as one of the best and most beloved teachers of the city. Mr. Barrell has touched upon particular points, one of which was that Mr. Bates will be judged by the opinion of his pupils as a whole. This is the best monument that can be erected to any of us. When one can say of his master, as was said of one of our number, "he was the best friend I ever had," we know that we need no other monument. As I said on another occasion, there are three stages in the life of a pupil as regards his teacher. The first stage is when he first knows his teacher and his word is law. It is an age of hero worship. Everything the teacher says is accepted and he often overestimates the teacher's character. A little later, when the pupil comes to investigate for himself, he finds that his teacher is often mistaken. So he often swings off into the opposite path and distrusts and perhaps underestimates the value of the teacher's character. But later in life, when he looks over the whole ground with a fair and judicial mind, he estimates the teacher at his true worth. Happy are we if our pupils can say of us, "He was our best friend." I believe that Master Bates's pupils will say that of him, and if you would seek his monument, as was said in another connection, "look around you."

Mr. James A. Page, of Boston.—Mr. Joshua Bates, late master of the Brimmer School, in Boston, was born in Dedham, Mass., on the 17th of March, 1810. He died at Beverly on the 25th of June, 1888. His space of life was therefore seventy-eight years.

When he was eight years of age his father was elected president of Middlebury College, Vermont. He was sent by his father to Andover to fit for college, and graduated honorably at Middlebury, in 1832. The next year he entered upon his life work as a teacher, and in his twenty-fourth year he was elected to the mastership of one of the important schools of Charlestown. From 1844 to 1876—a period of 32 years—he was master of the Brimmer School, in Boston.

It would be interesting to trace his progress as a boy, a student, a man and a teacher,—he was honored in each of these relations,—but it is chiefly as a teacher that he is known to this generation, by whom he will be held in high and loving

regard. To give a slight outline of the spirit of his teaching will be therefore the object of this sketch.

He made traditions; he established rules and regulations for the government of the Brimmer School which in time had not only the force of law, but of *good form* as well. It was the thing for every decent boy to conform to them.

He was especially anxious concerning the morals and manners of his pupils. His conception of his duty to the school embraced his duty to the state and to the community. He magnified his office in a good sense. He was fond of saying, in a not wholly humorous way, that the master of the school is greater than the state, for he is dealing with the material that makes the state.

He was sure that he ought to turn out good citizens from his school, and so he spent a certain portion of one day in the week in giving carefully prepared talks on topics that developed character. This was consonant with his definition of education; that it was not so much knowledge given, or so much instruction imparted, or so much learning from books or any other source, but a long, constant, intelligent discipline that finally discovered the boy to himself, told him his unknown powers, and turned him out at last sound in morals, mind, and body.

As a result there was a certain solidity, seriousness, and self-respect, as well as courtesy, perceptible at all times in his classes. That he was justified in the course he took to impress on his pupils the supreme importance of character and manners, is confirmed by the following extract from good authority:

"In America there are at present certain especial influences under which the average man or woman is learning those elementary rules of manners, which furnish the foundation for even conventional good breeding. One of these is the public school, where from every pupil are exacted, for five or six hours a day, the minor habits of outward propriety, such as cleanliness, self-control, order, reticence, mutual courtesy. Whatever else the public school system inculcates, it certainly teaches these things."

Joubert says of the English, "Ils sont élevés dans le respect

des choses sérieuses,' and Col. Higginson declares that this grave purpose lies at the foundation of what is noblest in manners.

Any one of Mr. Bates' fine qualities, his talent for administration, his sound judgment, his prompt and firm decision, would have made him a marked man and a good teacher, but when there was added to these a power of drawing young men's hearts to him, a sense of humor that never failed, and a fidelity that had a staying quality in it, like the star that hath no fellow in the firmament,—then it is that the memory of him becomes a precious inspiration.

Mr. Bates was a broad hearted man. He not only gave his sympathy largely, he craved it. If it is delightful to read the letters of encouragement he scattered along his way, it was touching to see his face light up at the coming of an old friend. Especially memorable was it to see the closer growing attachment as the years went on, between himself and his oldest colleague in the service, the eminent ex-master of the Everett School. Well has it been said that when two such men left the service, it was no common event.

Mr. Bates felt proud of his calling. He called it a profession. As he followed it, it was a sacred one.

"It may be glorious to write
Thoughts that shall glad the two or three
High souls, like those far stars that come in sight
Once in a century:

But better far is it to speak
One simple word, which now and then
Shall waken their free nature in the weak
And friendless sons of men."

HENRY F. HARRINGTON.

MR. TASH.—Of Supt. Harrington we may say his educational work is not only well known in this country but abroad as well. It was done in three prominent lines. 1. In his unequalled annual reports read carefully by all educators, and especially by superintendents. 2. In his manual for his teachers, and for teachers all over the country as well. 3. By his spelling-book,—the most useful since that of Noah Webster.

We call upon Ray Greene Huling to give particulars respecting Supt. Harrington, since as Master of the High School of New Bedford he must have come into close contact with him in educational work.

Mr. Huling.—Mr. President, Mr. Harrington became a fellow-worker of mine only in his later years; it would obviously be better if those should speak for him who knew him in the fullness of his manhood and the plenitude of his strength. Yet since it is the wish of our Chairman, I cannot refuse to add a few words.

Henry Francis Harrington was born August 15, 1814, in Roxbury, Mass., and was the son of Joseph and Rebecca (Smith) Harrington of that town. From the schools of his native place he passed to Phillips Exeter Academy and thence to Harvard College, from which he graduated in 1834. For the next two years he served as usher in the English High School, Boston, but soon turned to literary work, editing a paper then called the Boston *Herald*. Subsequently he removed to New York, where he engaged in similar work, at one time editing the *Galaxy*. Those were the days of small things for many who have since become famous. There are some here, I see, who remember hearing Mr. Harrington tell of the first reading of Longfellow's "Excelsior," in the editorial sanctum of a New York periodical, and who recall the contempt which it excited in the rough old publisher. The world has since grown much better acquainted with the name then so little known.

While in New York, Mr. Harrington began a course of theological study with Rev. Dr. Bellows, and in 1841 supplied for several months the pulpit of a Unitarian church in Savannah, Ga. On his return to the North he was for three years Minister-at-large in Providence, R. I. Subsequently he was settled for about the same number of years as minister at Albany and at Troy, N. Y. About the year 1847, he became pastor of a church at Lawrence, Mass., preaching, it is said, the first Unitarian sermon ever delivered there. Next he removed to Cambridgeport, and for ten years held the pastorate of the Lee Street Church. In all his work as a clergyman he seemed to covet the post of the pioneer. He playfully said to

me once: "When my parish had got into such a condition that any other clergyman would look at it, my work was done."

While a pastor at Lawrence, Mr. Harrington was chosen upon the School Committee, and as long as he would serve continued to be a very influential member of that body. To him in great measure was due the organization of that city's excellent system of schools. At Cambridgeport, also, he served upon the School Board, and contributed to the Cambridge *Chronicle* a series of criticisms upon the public schools, in which can be traced the germs of most of his later educational theories.

When, therefore, in 1864 he became Superintendent of Schools of New Bedford, he entered upon a task for which he was not unprepared both by nature and by previous experience. At fifty years of age, with slight physique, but all alive with zeal and courage, he took up what proved to be the main work of his life; nor did he lay it down till the twelfth hour had struck.

His services there are too well known to be reviewed here. In his strength he was strong indeed, and after his vigor gave place to feebleness, as in time it did, he still sat at the centre of influence as secretary of every committee of the School Board, scrutinizing every theory proposed and directing its application to the operations of school life. He was not able closely to inspect the schools, but he led the gentlemen of the School Committee to do it for themselves, which was a better service

You all know of his Manual, the first of its kind in New England; of his Annual Reports, the most widely read and most provocative of discussion, of any in the land. Some have doubtless heard of the two text-books he completed, and of that other which occupied his latest strength, and dropped from his hands unfinished. But it was not given to all to know the rare excellence and beauty of his private life, the strength and earnestness of his friendship, his self devotion to his invalid wife, and his tenderness to his children. An eminently pure and noble character was his.

Mr. Harrington's best work was put into the study of the

educational problems raised by the needs of the schools of New Bedford. Nor were the people of that city insensible to his services. Even the children learned to love him, and the school exercises in his honor were simply beautiful. One Friday, between the hours of eleven and twelve, forty-five hundred school children gathered, each school in its own room, and by ways manifold and various honored his memory by memorial services. And later in the day many a little group wound its way to a certain grassy hillside, till, ere nightfall, the bright flowers of autumn banked high his grave and made new mounds of beauty all about it. Thus lies his memory garlanded in the hearts of the young people whom he served. As for their parents, there is rising the present summer a fine, large school edifice, to which, in answer to the general desire of the community, has been affixed the name of the Harrington School.

The report of the Committee on Necrology was then accepted and ordered to be placed on file.

A recess was then taken.

After the intermission, President Nicholas Murray Butler of the N. Y. College for the Training of Teachers, and Lecturer upon the History and Institutes of Teaching, at Columbia College, N. Y., delivered a lecture on the subject "Manual Training."

The speakers who had been invited to follow this address,—Superintendents C. E. Meleney of Somerville, Mass., and S. T. Dutton of New Haven, Conn., —presented papers further elucidating the subject. Then followed an extempore discussion in which Dr. J. G. Fitch of London, Dr. Greenough of Westfield, Mass., and Mr. E. L. Kellogg of New York City made remarks.

The Committee on Resolutions, through the Chairman, Wm. H. Lambert, of Fall River, presented the

following resolutions, which were unanimously adopted:

WHEREAS, A vital defect in the administration of the schools, especially of the country towns of New England, is their lack of proper supervision.—

Resolved, That legal provision should be made for securing to all schools a system of supervision by competent superintendents,—a system which is proving so effective in the schools of our cities.

Resolved, That we recommend the adoption of the town system in the administration of schools as now sanctioned by the successful experience of all the states foremost in education.

Resolved, That in view of the close connection of the home and the school, we invite the coöperation of the teachers of America in organizing Village Improvement Societies, hundreds of which scattered widely over the country are securing better sanitary and esthetic conditions of homes and communities, fostering public spirit and town pride, inviting liberal plans and gifts for public libraries and for many other improvements, and promoting the more general observance of Arbor Day, already adopted in twenty-seven states and territories.

Resolved, That the thanks of the Institute are heartily tendered to the bands and the singers who have furnished so excellent music; to Col. Closson, for the instructive and entertaining military display at Fort Adams; to Capt. Higginson, for exhibiting the admirable manual and drill of the apprentices connected with the schoolship New Hampshire; to Capt. Goodrich, for the opportunity of witnessing the methods of torpedo warfare; to Capt. Mahan, for his courteous attentions at the War College; to the governors of the Casino, for their kindness; to the city government of Newport and her hospitable citizens, for their cordial reception and delightful entertainment; to the various railroads, steamboat companies and hotels for reduced rates; and to all who have contributed to our comfort and welfare.

Resolved, That we especially desire to recognize the ser-

vices of the local committee and their efficient secretary, George A. Littlefield, Esq., for the perfection of their arrangements by which the remarkable success of this meeting has been assured.

The meeting then adjourned till evening.

AFTERNOON.

During the afternoon, the members of the Institute enjoyed the privilege of visiting the Torpedo Station, by courtesy of Captain C. F. Goodrich, the officer in command. Free transportation was given. The Government shops and laboratory processes were inspected, and the explosion of a torpedo in the waters of the inner harbor, in honor of the Institute, was witnessed.

At the Channing Memorial Church, an organ recital was given at 5 P. M., by Mr. Alfred G. Langley.

EVENING SESSION.

At 7:30 P. M., Mullaly's Newport Casino Orchestra gave a concert in Music Hall, consisting of the following numbers:—A March by Mendelssohn, Sullivan's Lost Chord, and Alberti's La Rêvissante.

At 8 o'clock President Hall took the Chair.

The Temple Quartette, of Boston, sang a part-song, and, in response to an encore, gave a humorous selection.

Mr. John Matteson, of Providence, R. I., then gave a spirited rendering of Longfellow's "Ballad of the Carmilhan," as told in the "Tales of a Wayside Inn."

Prof. Edward S. Morse of Salem, Mass., delivered a lecture on "Educational Matters in Japan."* He illustrated by blackboard drawings the formation of the Chinese and Japanese alphabets.

The Temple Quartette again sang, and were twice enthusiastically recalled.

Mr. Matteson again favored the audience with a selection, giving the unfortunate experiences of Mr. Bates of N. Y. City, seeking quiet and rest in the country.

President Hall then addressed the Institute in appreciative valedictory remarks. He reviewed the work of the Institute, commended and thanked both the members and the citizens of Newport who had assisted to give him so agreeable a term of office, and after alluding to the exacting duties that would devolve upon his successor, prepared to transfer to him the gavel of authority.

He appointed Hon. James W. Patterson a committee to conduct to the platform the President-Elect. That gentleman gracefully performed his duty, and in terms complimentary to both, brought the past and the future presidents face to face.

President Hall in the following words transferred the gavel to President-Elect Littlefield, and thus introduced to the Institute the new presiding officer:

My dear friend and fellow-worker:

Two years ago, my genial and esteemed predecessor, when he delivered to me this gavel as the emblem of the office to which you have to-day been unanimously elected, expressed himself in words somewhat like these: "My last public duty,

*NOTE. It has been found impossible to obtain an adequate report of this address for publication in this volume.

as president of this association, and I assure you it is one of the pleasantest among the multitude which I am about to lay aside, is to deliver into your hands this emblem of the position which you now assume."

I thought I understood English language well enough to comprehend those simple words, but their meaning comes to me to-night deepened and intensified, as, doubtless they will to you at some future time. I do not use these words to produce discouragement, nor with the intent to chill the ardor with which I know you will enter upon the new duties which you to-night assume.

That every position of honor has its corresponding cares and responsibilities you know full well. That you have the strength and the courage to assume and meet them is to those who have selected you for this position of honor, a satisfaction and a pleasure. And let me assure you that should your experience be like mine, as doubtless it will, you will find among us, the rank and file, a unanimous readiness, nay more, a unanimous desire to strengthen your hands and lighten your labors.

With trembling hands I received this emblem from its former possessor. With strong hands and a thankful heart I now deliver it to you, realizing in a new sense how much more blessed it is to give than to receive.

May the blessing of God rest upon you and our beloved, honored and honorable association throughout your administration, and when the wheel of time brings you to the position which I now occupy, may you hear from mortal lips those words, which, many years later, I trust, you will hear in celestial tones, "Well done, thou good and faithful servant."

The new incumbent gracefully replied thus:

Mr. President, Ladies and Gentlemen—It is indeed a great honor to be chosen to the presidency of this ancient and honorable society, a position which for more than half a century has been filled from among the most eminent men in the educational world. I accept the high distinction with the heartiest thanks and with the deepest sense of the respon-

sibility it imposes upon me, succeeding, as I have the honor to do, one whose administration has been so notably efficient. The great favor you confer upon me, I am well aware, is designed also as a mark of courtesy to our city of Newport, whose good people have now, for the second time, taken a hearty pleasure in welcoming you cordially to their homes, and I appreciate your kindness all the more on that account. It is appropriate, sir, that the oldest teachers' association in America should choose a president once from that community wherein was opened the first free common school upon this continent. Schools of other kinds, to be sure, had existed in the various colonies before, but it is now settled beyond question that the first free public common school in America, was established upon this island of Aquidneck, in the year 1640, under the mastership of Robert Lenthal, for whom the government of this city has recently named a great stone schoolhouse. It is therefore proper, sir, that this honorable body should choose a president here once, and my only fear is that you might have chosen from among our citizens, one far more worthy to represent them. It will be, however, my single aim to preside over the American Institute of Instruction to the best of my ability, and if I shall be so fortunate as to attain in some degree that success which has uniformly characterized the efforts of past presidents, it will prove, sir, to have been one of the proudest achievements of my life to have been chosen to this great office.

The Temple Quartette gave a humorous selection and were warmly encored. Subsequently at the request of President Littlefield they led the audience in singing the Doxology.

The Rev. A. D. Mayo pronounced the benediction, and the Fifty-Ninth Meeting of the Institute passed into history.

After the adjournment, President Littlefield called a meeting of the Board of Directors of the Institute to transact customary business.

FIFTH DAY.—Friday, July 13.

On Friday, as a part of the entertainment provided for the members of the Institute, through the generous hospitality of the good people of Newport, a grand excursion was taken on the steamer "Providence" of the Fall River Line, a delightful sail out into the Atlantic and around into the beautiful Narragansett Bay. The trip lasted from 10:30 A. M. to 2:30 P. M. It was a fitting conclusion to a series of meetings exceedingly successful and enjoyable in the highest degree.

The attendance was excellent, particularly at the evening sessions; the exercises went on without an interruption or an omission; and the retiring President may have the satisfaction of knowing that the standard of the Institute has not drooped during his administration but has been "full high advanced."

CONSTITUTION

OF THE

American Institute of Instruction,

Adopted August, 1870, as a substitute for the older one, and amended July, 1886.

PREAMBLE.

We whose names are hereunto subjoined, pledging our zealous efforts to promote the cause of popular education, agree to adopt the following Constitution:

ARTICLE I.—NAME.

The society shall be known by the title of the American Institute of Instruction.

ARTICLE II.—MEMBERS.

1. The members of this Institute shall be divided into three classes, styled active, associate, and honorary.
2. Any person interested in the cause of education and recommended by the Committee on Membership may become an active member by a major vote of the members present and voting at any regular meeting.
3. Only active members shall be empowered to vote and hold office.
4. Any person of good moral character may become an associate member by paying the annual assessment.
5. Honorary members may be elected by the Institute on recommendation of two-thirds of the Directors present at any stated meeting of the Board.

ARTICLE III.—MEETINGS.

1. The annual meeting shall be held at such time and place as the Board of Directors shall appoint.
2. Special meetings may be called by the Directors.
3. Due notice of the meetings of the Institute shall be given in the public journals.

ARTICLE IV.—OFFICERS.

1. The officers of the Institute shall be a President, Vice Presidents, a Secretary, an Assistant Secretary, a Treasurer, an Assistant Treasurer, and twelve Counsellors; all of whom shall constitute a Board of Directors.
2. The officers shall be elected annually by ballot, and shall continue in office till their successors shall be chosen.

ARTICLE V.—DUTIES OF OFFICERS.

1. The Secretary shall give notice of all meetings of the Institute and of the Board of Directors, and shall keep a record of their transactions.
2. The Treasurer shall collect and receive all moneys of the Institute, and shall render an accurate statement of his receipts and payments annually, and whenever called upon by the Board of Directors, to whom he shall give such bonds for the faithful performance of his duty as they shall require. He shall make no payment, except by order of the finance committee of the Board.
3. The Board of Directors shall devise and carry into execution such measures as may promote the general interests of the Institute; shall have charge of the property of the Institute; shall be authorized to publish its proceedings, and such papers relating to education as may seem to them desirable. They shall have power to fill all vacancies in their Board from members of the Institute, and make By-Laws for its government.

They shall have power to vote an annual assessment of one dollar upon the members, except honorary members, that shall be present at the annual meeting; they shall annually elect the following standing committees:

(1.) A committee of three, who with the President, Secretary, and Treasurer, shall constitute the Committee on Membership, whose duty it shall be to report to the Institute from time to time the names of such persons as they may recommend for membership.

(2.) A committee of three on Finance, whose duty it shall be to audit the accounts of the Treasurer, and under the control of the Board of Directors to draw orders on the Treasurer for the payment of charges against the Institute.

(3.) A committee of three on Necrology.

4. Stated meetings of the Board shall be held on the first Saturday in January, and on the first day of the annual meeting of the Institute.

ARTICLE VI.—BY-LAWS AND AMENDMENTS.

1. By-Laws not repugnant to this Constitution may be adopted at any regular meeting.

2. This Constitution may be altered or amended by a vote of two-thirds of the members present at the annual meeting, provided two-thirds of the Directors present at a stated meeting shall agree to recommend the proposed alteration or amendment.

BY-LAWS.

1. At all meetings of the Board of Directors seven members shall be necessary to constitute a quorum to do business.

2. It shall be the duty of the Secretary, on application of any two Directors, to call special meetings of the Board at such time and place as the President may appoint.

ADDRESSES.

I.

THE IMPORTANCE OF THE STUDY OF HISTORY.

BY EDWIN D. MEAD, BOSTON.

There hangs upon the wall of the historical lecture room at Johns Hopkins University this motto from Freeman: "History is past politics, and politics is present history"; and that the directors of the enthusiastic and admirable work in history which is being done at Johns Hopkins University attach considerable significance to the word appears from the fact that they also set it on the title-page of many of their publications. If we regard the word as emphasis upon a certain important thought about history and politics, it is a good and significant word. If we regard it as a definition of history, it is insufficient. It is important to realize vividly that Joshua, the son of Nun, that Pericles and Cimon, that Cicero in the Senate, the men who framed Magna Charta, the men who voted with Hampden, the men who went to the guillotine, were men of like passions and problems with ourselves, not figures on canvas, but men of flesh and blood, as truly as Gordon in the Soudan, as Gladstone and Salisbury, as Sumner at Washington, as the signers of the treaty of Berlin, as the men

who vote with Clemenceau or Castelar or Mills, as the men on the damnable road to Siberia this summer day, whose heart-break shames or fails to shame us in our easy freedom and complacent self-indulgence here at Newport. It is useful to project ourselves into the future and look backward to to-day, to read the newspaper as we shall read it when we are cool over the issue, to consider how the fight over the tariff will look when viewed in the perspective in which we now view the fight over the Corn Laws, to remember that Grover Cleveland and Parnell will quickly cease to figure in the newspapers, will quickly figure in the volumes of politicians' reminiscences, then as last-century celebrities like Wilkes and Samuel Adams now, by and by as mediæval men like some Conrad of Franconia and the Englishman, Hereward, and in time enough in the lists of ancient obscurities such as may bother the school-boy of the year 8001 as they bother the school-boy of 1888. It is useful and important to look at politics and history so, to keep in mind the sense of continuity which gives the sense of proportion. It keeps us from being feverish in our politics, and from reading history coldly and vaguely. It keeps us from confounding a ratification meeting or even a Republican National Convention with the day of judgment, enabling us to laugh instead of shudder when the Hon. Warner Miller of the pivotal State of New York cries that our this year's presidential election is one of the greatest struggles for freedom in modern history; and at the same time it keeps our sympathies quick and universal. It is good to see, with Freeman, that in our politics we are making history,

that politics is present history and history is past politics.

But history is more than past politics. If it is a definition of history that we are making, then we must say that history is also past religion, past literature, past art, past science, past philosophy. History is the record of the whole movement of the human mind, the story of all that men have thought and said and done. Lincoln, Longfellow, William Hunt, Agassiz and Emerson; Themistocles, Æschylus, Phidias, Euclid and Socrates,—all alike belong to history. Hegel plays a vastly more important part in History than Frederick William III., Copernicus than any Prussian grand-duke or Polish politician, Michael Angelo than the whole Medici magnificence, Francis Bacon, writing his *Essays* and his *Novum Organum*, than Lord Verulam, Viscount St. Albans, Keeper of the Great-seal and Lord High Chancellor of England, and Paul of Tarsus, planting little churches along the Ægean coast, than every public functionary of the time, from the tetrarch of Galilee to the Cæsar at Rome. How many pages, think you, will be needed, when the history of our own time is reduced to final form, for the deeds of the members for Stockton and Preston, the governors of Georgia and New York, and William Walter Phelps, beside the pages necessary for Stephenson and Arkwright, for Eli Whitney and Robert Fulton and Thomas Edison? "Which was the greatest innovator," asks Carlyle, "which was the more important personage in man's history, he who first led armies over the Alps and gained the victories of Cannæ and Thrasymene, or the nameless boor who first hammered out

for himself an iron spade? When the oak tree is felled, the whole forest echoes with it; but a hundred acorns are planted silently by some unnoticed breeze. Battles and war tumults, which for the time din every ear, and with joy or terror intoxicate every heart, pass away like tavern brawls and, except some few Marathons and Morgartens, are remembered by accident, not by desert. Laws themselves, political constitutions, are not our life, but only the house wherein our life is led; nay, they are but the bare walls of the house,—all whose essential furniture, the inventions and traditions and daily habits that regulate and support our existence are the work not of Dracos and Hampdens, but of Phœnician mariners, of Italian masons and Saxon metallurgists, of philosophers, alchymists, prophets and all the long forgotten train of artists and artisans, who from the first have been jointly teaching us how to think and how to act, how to rule over spiritual and over physical nature. Well may we say that of our history the more important part is lost without recovery; and,—as thanksgivings were once wont to be offered 'for unrecognized mercies,'—look with reverence into the dark untenanted places of the past, where, in formless oblivion, our chief benefactors, with all their sedulous endeavors, but not with the fruit of these, lie entombed."

The most noteworthy and the most noble historical work, to my thinking, which has been written in these latest years is Mr. Green's "History of the English People." It is interesting to observe that the chapter which follows that upon "The Great Charter" in this model history is upon "The Universities," the chapter which follows that upon "The Good Parlia-

ment" is "John Wyclif," that which follows "The New Monarchy" is "The New Learning," that which follows "The Armada" is "The Elizabethan Poets." A model history I call it, because it is a complete view, an all-round history, not exhaustive, but proportionate, with true insight into causes, with thought and learning balanced, with regard to the beautiful word amidst ugliest facts, with liberal spirit and high purpose, with faith in progress and in Providence. The many horses in the historical team—politics, religion, literature, art, science, philosophy—are all kept steadily abreast; and we feel that we understand the making of England with some degree of justice, and how it is that the English people has become what it is.

If we would understand the spirit and the history of any people, we must approach that people on many sides, and must learn how each form of expression affects every other phase of the national life, the national games affecting the foreign campaign, the songs coloring the laws, the current notions of hell and purgatory determining the ordering and function of the prison, the art, the poetry and the philosophy reflecting themselves in the church, in social usage and in politics. It is as necessary to consider "Uncle Tom's Cabin" and Whittier's poems, in tracing the development of the anti-slavery sentiment which led up to our Civil War, as to consider the doings of the Senate or the Lincoln and Douglas debate. "Observe," says Emerson, "the sources of our information in respect to the Greek genius. We have the *civil history* of that people, as Herodotus, Thucydides, Xenophon and Plutarch have given it;

a very sufficient account of what manner of persons they were and what they did. We have the same national mind expressed for us again in their *literature*, in epic and lyric poems, drama and philosophy; a very complete form. Then we have it once more in their *architecture*, a beauty as of temperance itself, limited to the straight line and the square,—a builded geometry. Then we have it once again in *sculpture*, the 'tongue on the balance of expression,' a multitude of forms in the utmost freedom of action and never transgressing the ideal serenity; like votaries performing some religious dance before the gods and, though in convulsive pain or mortal combat, never daring to break the figure and decorum of their dance. Thus of the genius of one remarkable people we have a fourfold representation; and to the senses what more unlike than an ode of Pindar, a marble centaur, the peristyle of the Parthenon, and the last actions of Phocion?"

Do not think that I propose to cite Emerson here against Mr. Freeman. Do not understand me to imply that Mr. Freeman's word about history, which I quoted at the beginning, was intended by himself as a full definition of history. Who, in this time, has taught us more strenuously how broad is the domain of history, how varied are its branches, how numerous are its satellites? Who has shown us so strikingly how important a part of the study of history is the study of geography? Who has shown with a better enthusiasm the historical value of the statue, the painting and the cathedral? Who especially has emphasized more constantly or more wisely the importance to the student of political history of the study of lan-

guage and of law? I could mention no living historical writer who better enforces and illustrates those methods of historical work and that general view of history which seem to me good. I could ask the attention of the teachers of history who may hear me to few words defining better the office of the teacher of history than Mr. Freeman's inaugural lecture at Oxford, with its memorable tribute to Arnold, his great predecessor, from whom, he tells us, he himself "first learned the truth which ought to be the centre and life of all our historic studies, the truth of the Unity of History."

It is legitimate and right, perhaps it is more and more necessary, that the historical writer who would be thorough and contribute something considerable to knowledge should devote his work mainly to one phase of a people's character and development. "Doubtless it is with a growing feeling of the infinite nature of History," wrote Carlyle sixty years ago—and the sixty years since have illustrated and enforced the point sixty fold—"that in these times the old principle, division of labor, has been so widely applied to it." Only he prayed, as we have reason to, "that increased division of labor do not here, as elsewhere, aggravate our already strong mechanical tendencies, so that in the manual dexterity for parts we lose all command over the whole, and the hope of any philosophy of history be further off than ever." It is right and necessary, I say, that one should write the political history of Greece, perhaps but a single chapter of that history, that another should write the history of Greek art, another the history of Greek poetry, another the history of Greek philosophy;

only the writer and the reader must remember that to the history of Greece belong alike Plato and Pindar and Phidias and Phocion, and that philosopher and poet and sculptor and statesman all affect each other and all affect the general life, the public opinion and the national action. Anaxagoras and Sophocles will never fail to appear in the background of the true political history of the age of Pericles, nor windows through which we may look out upon all the influential activities of Athens and of Greece. The specialist in history may be an artist as truly as the encyclopedist; for in history, says Carlyle again truly, "as in all other provinces, there are Artists and Artisans; men who labor mechanically in a department, without eye for the Whole, nor feeling that there is a Whole; and men who inform and enoble the humblest department with an Idea of the Whole, and habitually know that only in the Whole is the partial to be truly discerned."

History has been defined as philosophy teaching by examples or by experience. The great historian must be a philosopher, not merely a great compiler of facts, but able to show whence the facts arise and whither they tend and what they utter. Thucydides, Tacitus, Winckelmann, Niebuhr, Ewald, Zeller, Gibbon, Grote, Motley, Lecky and Carlyle are great thinkers and teachers, gatherers of facts only that they may put facts to great uses, inquirers after principles, discerners of the genesis, the progress, the goal and the moral of the movements of nations and of men. "Whereas of old" says Carlyle, "the charm of history lay chiefly in gratifying our common appetite for the wonderful, for the unknown, and

her office was but that of a minstrel and story-teller, she has now farther become a school-mistress." "It may be laid down as a general rule" says Macaulay, "though subject to considerable qualifications, that history begins in novel and ends in essay." "A perfect historian," Macaulay says again, "must possess an imagination sufficiently powerful to make his narrative affecting and picturesque, yet he must control it so absolutely as to content himself with the materials which he finds and to refrain from supplying deficiencies by additions of his own. He must be a profound and ingenious reasoner; yet he must possess sufficient self-command to abstain from casting his facts in the mould of his hypothesis." Is it not right to add that as the profound and ingenious historian must ever be circumspect and wary of his hypothesis, so he must be reserved and mediate, for the most part, in his pedagogism, guiding his narrative so wisely that it shall do its own teaching? This also it is useful to consider: that history is less dependent than aught else upon a good writer, and that the good reader is here almost omnipotent. The uninspired and perfunctory sermon is wholly useless, unless, as the poet pleads, we let God take the text and preach us patience. The romance is beyond our control or supplementing influence, and if it be bad we are without escape and without compensation. The prosy poem is prosiest to the poet. And the witless essay who can bear? But to the good reader, the man who brings to it philosophy and insight of his own, the driest chronicle or catalogue of historic facts, or the poorest report in the newspaper, is luminous and eloquent. The poem and the romance

are all imagination. History is the synthesis of imagination and facts. "Facts" as Macaulay says, "are the mere dross of history. It is from the abstract truth which inter-penetrates them, and lies latent among them like gold in the ore, that the mass derives its whole value." "In history," he says, "the facts are given, to find the principles; and the writer who does not explain the phenomena as well as state them performs only one-half of his office." This is true; and happy are we when we have a Macaulay or a Bryce or a Parkman to explain the phenomena as well as state them for us. Yet it is also true that each of us may explain them for himself, and always possible that we may explain them better than this other man who writes about them. Each of us, in a word, may be his own historian. The material of history is open to all alike. History is no bound book; history is the past life of humanity. This historian or that may be a philosopher, and read that life aright, or not. But the spirit of history itself is a philosopher, reliable, abiding, one and the same; and each of us is free to study this philosopher's philosophy for himself, and to master it if he can. He is indeed but half a historian who is not a philosopher, who does not explain the phenomena as well as state them. But he is a most useful man who states the facts for us aright, to let our own minds work upon them. We are debtors to the faithful reporter of phenomena, to him who reports them as they are and not as they are not.

History, I have said, is philosophy teaching by examples or experience; and it is because there is so much truth in the old proverb, "Experience is the

best schoolmaster," that the importance of the study of history is so great. Experience is of many kinds, and we may get it in many ways. A large part of education is simply the wise condensing or discounting of experience, the putting of the individual in quick possession of the wisdom won by the race step by step, through the slow and painful ages, that he may start in his career with so much advantage. The poem, the play and the novel may give us experience as truly as history, the newspaper or the hotel; whether so or not depends upon whether the poet, the playwright or the story-teller is as true to human nature as acting men and women are. He may be vastly truer. The hero of the play you saw last week was a true man, acting upon principles which history avouches real, a man obedient to the genuine laws of cause and effect; but the woman and the woman's niece who talked about the play with you at the boarding-house are not real persons at all, but artificial persons, obedient for no one hour of life to the laws of their own nature. The play was a reality; the women's lives are a poor masquerade, with no education in them, no honest experience, for you. To how many of us is it not often true, and properly true, that Hamlet and Margarete and Evangeline and Adam Bede and the poor Peggottys there in their boat-house on the sands are more real and more influential persons, far greater contributors to true experience, than all our neighbors? Nowhere does man appear more truly divine, more truly a worker together with God, than in this power to increase the population infinitely by the mere act of his pen, this power to create men and women as influential and as

immortal, so far as this earth goes, as any helped in by the midwife. Only if the poem and the novel are to contribute like history and life to true experience, it must be because a true philosophy of life informs them, because they too are philosophy teaching by examples, because they report the phenomena of life according to what is and not according to what is not. I have just laid down two novels, George Eliot's "Felix Holt" and Rhoda Broughton's "Joan." The one most of you undoubtedly have read—a story showing how a capacious woman, all unconscious of her high capacities, contented or discontented in her small and irresponsible dreamings, is educated and transformed by the power of a noble love out of regard for what was vain and trifling into devotion to what was worthy and sturdy and beautiful and great in life. The other is a story not without power, not without insight, not without wit, not without good moralizing, a clever book, but a fundamentally false book, reporting the main phenomenon according to what is not and not according to what is and ought to be, sending the reader away, unless he be wiser than the writer, with the notion that that is magnanimity and heroic self-sacrifice which, however unconsciously, is really mock heroism and fustian, levity and cruelty, faithlessness to the highest through fear of a poor convention, and fundamental sin, no less sin because its utmost consequences are averted by the accident of death, so easily commanded by the second-rate novelist, but of which the first-rate novelist will permit himself no freer use than the newspaper reporter.

Now it is with histories—ever, after our fellows,

the great source of experience—as it is with novels. There are fustian histories, which give us false experience and mal-educate us; and there are sincere histories, which report the facts and explain them, which help us toward a true philosophy of history and help us to be honest and serious men. To the same period of English history may be devoted volumes upon "blessed King Charles the Martyr" and Carlyle's "Oliver Cromwell," volumes upon the Courts of the Georges and Lecky's "England in the Eighteenth Century." Perhaps the most significant change in the aim and spirit of historical writing in this later time is that indicated by the title of Mr. Green's history, which I have praised: "A History of the English People." It is the same change which came in poetry with Burns and Wordsworth, and which has come in the modern novel. The novel of the first part of the century, most novels of much later time, how many novels to-day, deal with a wholly artificial world, the world of the dangerous little upper classes, the world of marchionesses and etiquettes and perfumes and pallor and Belgrade, the world of fine idleness and vapid romancing, the world of hereditary bankers, perhaps of kings, and encourage the reader to a consuming interest in this emptiness, perhaps a longing for it. Howells does us good service by his persistent plea for honest realism. Realism is not the opposite of idealism; it is the opposite of vapid romancing, of unrealism. Emerson was a realist, Goethe was a realist, Shakespeare was a realist, Aristotle was a realist. Realism in the novel may deal with small things or it may deal with great things, with the boarding-house or the legislature,

the summer hotel or the blacksmith's shop, with flirtation or with reform. Our greatest novelist in these latest days, and our most serious and hortatory one—I mean George Eliot—was also our greatest realist, and her exposition of realism in "Adam Bede" might be read with almost as much profit by the historian as by the novelist.

It was Charles Dickens who, above all others, took the novel away from the West End and from king's houses, put off its soft raiment and its coat-of-arms, and made it the book of the English people. Whatever criticisms may be made upon Dickens, upon his rhetoric, upon his conceits, even upon his conceptions of character, that great glory is surely his,—that he made the novel the book of the English people, and was one of the greatest preachers of democracy, of simple manhood, of brotherly love, and of wrath to come for the tyrant and the pretender, who ever spoke to men. How such a man would write history appears from the "Child's History of England," which he did write, and which is still the best history of England for youngest readers. Appears still more from the "Tale of Two Cities." I do not think that there is any book—and I do not forget Carlyle—which gives a truer picture of the French Revolution than this, any which more impressively reveals its causes and its undercurrents, its spirit and its fatal necessity. It would be useful here, and pertinent, to dwell upon the general function and importance of the historical novel; but this I may not now permit myself.

"At Lincoln Cathedral," says Macaulay, "there is a beautiful painted window, which was made by an

apprentice out of the pieces of glass which had been rejected by his master. It is so far superior to every other in the church that, according to the tradition, the vanquished artist killed himself from mortification. Sir Walter Scott, in the same manner, has used those fragments of truth which historians have scornfully flung behind them, in a manner which may well excite their envy. He has constructed out of their gleanings works which, even considered as histories, are scarcely less valuable than theirs. But a truly great historian would reclaim those materials which the novelist has appropriated. The history of the government and the history of the people would be exhibited in that mode in which alone they can be exhibited justly, in inseparable conjunction and intermixture. We should not then have to look for the wars and votes of the Puritans in Clarendon, and for their phraseology in 'Old Mortality'; for one-half of King James in Hume, and for the other half in the 'Fortunes of Nigel.'"

I have said that, as the novel becomes less and less the book of Belgrade, and more and more the book of the people, so history, the history of kingdoms and empires, becomes less and less the history of kings and emperors, and more and more the history of the nation, which, with whatsoever public functionaries or oppressors "by divine right," was still chiefly a nation and not chiefly an appendage of the court. Perspective and proportions change, and we see that this Tiberius or Caligula, this George IV. or William IV., who has taken so much space in the old volumes, is a little thing, and that this struggling Roman people or English people, with its plows and

shops and ships and language and laws and books and families and funerals and prayers, is a very great thing, great for us who follow it and are born of it.

"From of old," said Carlyle sixty years ago—it has become common and easy to say it to-day—"it was too often to be reproachfully observed of the political historian, that he dwelt with disproportionate fondness in senate-house, in battle-fields, nay, in kings' ante-chambers; forgetting that, far away from such scenes, the mighty tide of thought and action was still rolling on its wondrous course, in gloom and in brightness; and in its thousand remote valleys, a whole world of existence, with or without an earthly sun of happiness to warm it, with or without a heavenly sun of holiness to purify and sanctify it, was blossoming and fading, whether the 'famous victory' were won or lost. The time seems coming when much of this must be amended; and he who sees no world but that of courts and camps, and writes only how soldiers were drilled and shot, and how this ministerial conjuror out-conjured that other, and then guided, or at least held, something which he called the rudder of government, but which was rather the spigot of taxation, wherewith, in place of steering, he could tap, and the more cunningly the nearer the lees, will pass for a more or less instructive gazetteer, but will no longer be called a historian."

To the same effect writes Macaulay, in his essay on History; and the thought is so important that we may well listen to its repetition in other words. "Bishop Watson," says Macaulay, "compares a geologist to a gnat mounted on an elephant and laying down theories as to the whole internal structure of

the vast animal from the phenomena of the hide. The comparison is unjust to the geologists; but it is very applicable to those historians who write as if the body politic were homogeneous, who look only on the surface of affairs, and never think of the mighty and various organization which lies deep below. We have read books called Histories of England, under the reign of George the Second, in which the rise of Methodism is not even mentioned. As the history of States is generally written, the greatest and most momentous revolutions seem to come upon them like supernatural inflictions, without warning or cause. But the fact is, that such revolutions are almost always the consequences of moral changes, which have gradually passed on the mass of the community, and which ordinarily proceed far before their progress is indicated by any public measure. An intimate knowledge of the domestic history of nations is therefore absolutely necessary to the prognosis of political events. Most people look at past times as princes look at foreign countries. More than one illustrious stranger has landed on our island amidst the shouts of a mob, has dined with the king, has hunted with the master of the stag-hounds, has seen the guards reviewed and a knight of the garter installed, has cantered along Regent street, has visited St. Paul's and noted down its dimensions, and has then departed, thinking that he has seen England. He has, in fact, seen a few public buildings, public men and public ceremonies. But of the vast and complex system of society, of the fine shades of national character, of the practical operation of gov-

ernment and laws, he knows nothing. He who would understand these things rightly must not confine his observations to palaces and solemn days. He must see ordinary men as they appear in their ordinary business and in their ordinary pleasures. He must mingle in the crowds of the exchange and the coffee-house. He must obtain admittance to the convivial table and the domestic hearth. He must bear with vulgar expressions. He must not shrink from exploring even the retreats of misery. He who wishes to understand the condition of mankind in former ages must proceed on the same principle. If he attends only to public transactions, to wars, congresses and debates, his studies will be as unprofitable as the travels of those imperial, royal and serene sovereigns, who form their judgment of our island from having gone in state to a few fine sites and from having held formal conferences with a few great officers. The perfect historian is he in whose work the character and spirit of an age is exhibited in miniature. . . . In his narrative a due subordination is observed: some transactions are prominent; others retire. But the scale on which he represents them is increased or diminished, not according to the dignity of the persons concerned in them, but according to the degree in which they elucidate the condition of society and the nature of man. He shows us the court, the camp, and the senate. But he also shows us the nation." How well Macaulay himself illustrates his theory, in his own History of England, written twenty years after the essay from which I quote, every reader of that rich and brilliant work will be quick to remark; and the striking words in the opening pages, in

which he enforces the theory anew, will here be remembered.

Why do I iterate and reiterate this thought? Because my answer to the question concerning the importance of the study of history is that experience is the great teacher, and history is condensed experience. But if experience is to teach us well, then it must be true experience, and not superficial, artificial and untrue experience. Our history must be the history of the substance and not the show, of the realities and not the masquerade, the history of what has borne fruit.

History is for use. Clio was the eldest daughter of Memory and chief of the Muses. History is recollection, but recollection only for the sake of inspiration, for the sake of instruction and of prophecy. "It is a looking both before and after," Carlyle said. "What do we mean," Macaulay asks, "when we say that one past event is important and another insignificant? No past event has any intrinsic importance. The knowledge of it is valuable only as it leads us to form just calculations with respect to the future. A history which does not serve this purpose, though it may be filled with battles, treaties and commotions, is as useless as the series of turnpike tickets collected by Sir Matthew Mite." That is it. History is useless if it is simply erudition and not life; the study of history is not important unless we relate it to present politics, to present religion, to the world that now is, and to the future that we are helping to build. "The student," said Emerson, "is to read history actively and not passively, to esteem his own life the text and books the commentary." A man

may be as learned as Scaliger or Ranke, yet all his knowledge may be without import to the world or to himself, and he may bring nothing to pass; while a Marlborough, as Carlyle observed, "may become great in the world's business with no history save what he derives from Shakespeare's plays."

I suppose that Patrick Henry was the least learned of all the Virginian leaders in 1775, save perhaps George Washington; but because he had been an active and not a passive student of history, he understood the emergency more truly than any other, and the fatuity of continuing to cry peace when there was no peace. Such education as he had he got chiefly from reading history—Livy, the history of Greece, of England, of the American colonies, especially of Virginia; and his famous speech in the spring of 1775 was an appeal to history: "I have but one lamp by which my feet are guided, and that is the lamp of experience. I know of no way of judging of the future but by the past. And judging by the past, I wish to know what there has been in the conduct of the British ministry for the last ten years to justify those hopes with which gentlemen have been pleased to solace themselves and the house." What is this but a practical form of Carlyle's plea for the study of history: "Let us search more and more into the Past; let all men explore it, as the true fountain of knowledge; by whose light alone, consciously or unconsciously employed, can the Present or the Future be interpreted or guessed at." But before this, before he went to the meeting of the first Continental Congress at Philadelphia, Patrick Henry showed in a still more remarkable

way how reading history actively and not passively can make the prophet. It was in a company at his friend's, Col. Samuel Overton,—the story is preserved for us by Mr. Wirt. Col. Overton asked Henry whether Great Britain would drive her colonies to extremities and, if she should, what he thought would be the issue of the war. Henry, after looking round to see who were present, answered confidentially: "She will drive us to extremities; no accommodation will take place; hostilities will soon commence; and a desperate and bloody touch it will be." "But," said Col. Overton, "do you think that an infant nation as we are, without discipline, arms, ammunition, ships of war, or money to procure them—do you think it possible, thus circumstanced, to oppose successfully the fleets and armies of Great Britain?" Henry replied, "I doubt whether we shall be able, alone, to cope with so powerful a nation. But," he continued, rising from his chair with great animation, "where is France? Where is Spain? Where is Holland? the natural enemies of Great Britain—where will they be all the while? Do you suppose they will stand by, idle and indifferent spectators of the contest? Will Louis the Sixteenth be asleep all this time? Believe me, no! When Louis the Sixteenth shall be satisfied by our serious opposition, and our *declaration of independence*, that all prospect of reconciliation is gone, then, and not till then, will he furnish us with arms, ammunition and clothing, and not with these only, but he will send his fleets and armies to fight our battles for us. Our independence will be established; and we shall take our stand among the nations of the earth!" Col. Overton said

that he should never forget the voice and prophetic manner with which these predictions, afterwards so literally verified, were uttered. At the word *independence*, he said, the company appeared to be startled, as they had never heard independence even suggested before.

History is experience for you and for me, because history is what men and women like you and me have felt and thought and said and done, because human nature, under all its varying conditions, is still always and everywhere essentially the same. "We are always coming up with the emphatic facts of history in our private experience," says Emerson, "and verifying them here. All history becomes subjective; in other words, there is purely no history, only biography." As Carlyle also says, "History is the essence of innumerable biographies."

I have many times quoted Carlyle in this address. I have more than once quoted Emerson. They were the wisest men in the England and America of their time. They were alike in the high importance which they attached to the study of history. It is right, perhaps, to pronounce Carlyle the greatest historian of his time. Both wrote much of individual men, often of the same men—Goethe, Shakespeare, Napoleon. It was because these were representative men, exponents of ideas. Biography, like history, to Carlyle and Emerson, was philosophy teaching by examples, and they chose their subjects with a purpose. Both men wrote impressively about biography—"Hero Worship," "The Uses of Great Men;" and both wrote impressive and wise essays upon History. Besides devoting to the subject of history the essays

with which most of you are doubtless familiar, Carlyle devoted to it, in great part, the address to the students of Edinburgh University, as Lord Rector, which was his last public utterance. "It is highly expedient to go into history," he said to those Edinburgh students, adding much which I should like to repeat about Greece and Rome and Oliver Cromwell, and about good books and bad books.

The first essay in Emerson's first volume of essays is upon History; and the first words of that first essay are a pregnant statement of the truth which I have pronounced the ground of the importance of the study of history. The words are these: "There is one mind common to all individual men. Every man is an inlet to the same and to all of the same. He that is once admitted to the right of reason is made a freeman of the whole estate. What Plato has thought, he may think; what a saint has felt, he may feel; what at any time has befallen any man, he can understand. Who hath access to this universal mind is a party to all that is or can be done, for this is the only and sovereign agent. Of the works of this mind history is the record." This is Emerson's philosophy of history, the ground of his conception of the meaning and uses of history and the importance of its study. It is to the enforcement and illustration of this idea, in various ways, that his essay is mainly devoted. "We sympathize in the great movements of history," he says, "in the great discoveries, the great resistances, the great prosperities of men, because there law was enacted, the sea was searched, the land was found, or the blow was struck, *for us*, as we ourselves in that place would have done or

applauded." "What befell Asdrubal or Cæsar Borgia," he says again, "is as much an illustration of the mind's powers and depravations as what has befallen us. Each new law and political movement has meaning for you. Stand before each of its tablets and say, 'Under this mask did my Proteus nature hide itself.' This remedies the defect of our too great nearness to ourselves. This throws our actions into perspective; and as crabs, goats, scorpions, the balance and the waterpot lose their meaning when hung as signs in the zodiac, so I can see my own vices without heat in the distant persons of Solomon, Alcibiades and Catiline."

Somewhere—I cannot now repeat the passage—Emerson urges the young man to spare no effort to get experience, much experience, varied experience, to shrink from no hardship that shall give him that. This too we may translate into a command to study history. A bashful boy may grow up to manhood on a Green Mountain farm, almost never speaking to man or woman, but having Plutarch, Bancroft and Macaulay in his chamber, and reading the doings of Congress in the county newspaper, and suddenly step forth a politician, mastering the hard situation in an easy way that avouches him a giant in experience. A boy may be born in Fifth Avenue, do business on Broadway and Wall street, summer at Newport or at Baden-Baden, winter at Washington or in Pall Mall, and be an inexperienced and callow man, equal to no emergency, never knowing what citizenship means, what business means, or what life means. To the one, life itself is not experience. To the other, history is present politics, present society,

present philosophy, present religion, present example and commandment.

What history is most important? Carlyle remarked, in the essay from which I have quoted, that the political conditions under which life is passed, although the primary, are perhaps not the most important. He pronounced the department of ecclesiastical history, if rightly conducted, more important than the department of political history; "inasmuch," he said, "as it concerns us more to understand how man's moral well-being has been and might be promoted, than to understand in the like sort his physical well-being — which latter is ultimately the aim of all political arrangements." "Church history," adds Carlyle, "did it speak wisely, would have momentous secrets to teach us: nay, in its highest degree, it were a sort of continued Holy Writ; our Sacred Books being, indeed, only a history of the primeval Church, as it first arose in man's soul, and symbolically embodied itself in his external life." But with the actual ecclesiastical historian he had to find the same fault which he found with the common political historian—"that his inquiries turn rather on the outward mechanism, the mere hulls and superficial accidents of the object, than on the object itself; as if," he says, "the Church lay in bishop's chapter-houses and ecumenic council-halls and cardinals' conclaves, and not far more in the hearts of believing men, in whose walk and conversation, as influenced thereby, its chief manifestations were to be looked for and its progress or decline ascertained."

Highest in dignity and difficulty among the other special provinces of history would be, Carlyle held,

and I think rightly, our histories of philosophy, "of man's opinions and theories respecting the nature of his being and relations to the universe visible and invisible; which history," he said, "were it fitly treated, or fit for right treatment, would be a province of Church history—the logical or dogmatic province thereof; for philosophy, in its true sense, is or should be the soul, of which religion, worship, is the body. In the healthy state of things, the philosopher and priest were one and the same." But the historians of philosophy whom he knew—this was before Zeller or Kuno Fischer had written, and while yet even Hegel's work was scarcely known in England—did not approximate his definition and demand. He pronounced them all "barren reporters, often unintelligent and unintelligible reporters, of the doctrine uttered, without force to discover how the doctrine originated, or what reference it bore to its time and country, to the spiritual position of mankind there and then."

One criticism only I feel compelled to make upon the words which I have here quoted from Carlyle, and that upon the antithesis in which he makes the Church exclusively concerned with man's moral well-being, and defines the ultimate aim of all political arrangements as man's physical well-being. Twenty years later Carlyle would have painted no such antithesis. He would have condemned, as we know he did in pointed terms, any such definition of the State. It is a poor, false and melancholly definition of the State. But it is a definition which, happily far less current to-day than it was when Carlyle wrote, still practically dominates many minds. To many still

the State is but a machine charged with the functions of taxation and police. Upon many it has not yet dawned that as citizens they are as sacredly and imperatively their brother's keepers as they may feel themselves to be as churchmen, and responsible as citizens for the intellectual and spiritual advancement, as well as for the material welfare of their fellow-men. The very dictionary still echoes the conceptions of a better, ancient time, reminding wandering men that politics is a part of ethics, its business the maintenance of a moral commonwealth. If we do not know this, then it is one of the most important offices of history to show us that other men have known it. Almost every truly great and philosophic man since the world began has known it; and especially did those great Greek men know it—those thinkers from whom, trained as they were in democracies more like our own than almost all intervening States, we have still and ever so much to learn. I have said to a friend, who is charged with the organization of a new university, that I should like to see professorships of Plato's "Republic" and Aristotle's "Politics." I was not speaking absolutely; yet had I been I should not have felt that I was speaking extravagantly, remembering how Arnold of Rugby, the noblest teacher of the century, chose Oxford rather than Cambridge for his sons, because Aristotle's "Politics" and "Ethics" were taught better there; remembering too in how many of our colleges professor of politics means practically professor of some book by Stuart Mill or Fawcett or another Englishman far less provocative and infinitely less considerable than Aristotle. The principles which

underlie the socialistic scheme, which is the scheme that now most occupies our economists, are discussed, sympathetically and critically, in Plato's "Republic" and in the review of the "Republic" in Aristotle's "Politics," with far greater power than in the last pamphlet. Aristotle shows us how no constitution can permanently endure, how every constitution is determined by what a people has now and here become, and what are the laws of change, it may be of revolution. He shows that it is the primary duty of the State to educate its citizens in accordance with its polity, and that the neglect of this is the greatest danger to the State. I would especially commend to this thoughtful assembly Aristotle's chapters upon education. I could ask your attention to nothing worthier of your attention. I can think of no words upon the education of women wiser than those of Plato in the "Republic." But it is not the object of this digression to refer to these things. The point which I wish to emphasize is that to Plato and Aristotle alike the good citizen is the good man, the object of the State is the supreme good, and the supreme good is not the good of the body but the good of the soul. The object of the State is the promotion of the higher life, the promotion of virtue. "The object of political association," are Aristotle's words, "is a life of felicity and nobleness, not merely a common life, but noble action * * * not merely to live, but to live well; otherwise slaves and the lower animals might form a State."

When we say that a man is a student of the constitutional period of our American history, we do not mean simply that he is a reader of the story of the

Constitutional Convention, but also that he is a reader of the writings of Madison and Hamilton and Washington. So when we counsel men to study the history of philosophy, we do not ask them simply to read about philosophers, but to read philosophers. To study the history of Greek philosophy is to study Plato and Aristotle; to know the history of German philosophy is to be at home with Kant and Fichte and Hegel. The man who is thus at home with the great thinkers will not be upset by any pamphlet nor disturbed by any article in the last magazine. He will divine at once the precise worth or worthlessness of the new theory which agitates the town; he will probably remember the chapter in which Plato or Descartes or Thomas Green stated it more powerfully and exhibited its fallaciousness. He knows what the problems are which men have thrown up, in their various forms, in the various ages; he knows what the principles are which the world's great thinkers have persistently and consistently declared, and which a hundred controversies have vindicated; and with this knowledge and these criteria, he walks firmly, his mind ever open and curious, ever finding something new and surprising and great, but never haunted by any fear of pitfalls. This is the use of the history of philosophy.

The history of religion—I like that term better than ecclesiastical history—has so many lessons for the man of open mind, that one shrinks from entering that great field at all. It teaches the man of open mind, in the first place, that his own religion is but one of many religions; that every land has had its mediators, its miracles and its bibles, which the man

who knows most and thinks most will treat most reverently as more or less pure revelations of the common Father to more or less aspiring souls or more or less educated minds; that God, in a word, is not alone the God of Israel and of New England. "Something that may be called religionism, not religion," says Gladstone, the orthodox churchman, in his fine essay on "Greece in the Providential Order," "has led us, for the most part, not indeed to deny in terms that God has been and is the God and Father of the whole human race, yet to think and act as if his providential eye and care had been confined in ancient times to the narrow valley of Jerusalem, and since the Advent to the Christian pale—or even to something which, enforcing some yet narrower limitation at our own arbitrary will, we think fit so to call." "If we had any vivacity of soul, and could get the old Hebrew spectacles off our nose," thunders the great radical, Carlyle, less patiently, "should we run to Judea or Houndsditch to look at the doings of the Supreme?" "All religion," he says elsewhere, "is here to remind us, better or worse, of what we already know better or worse, of the quite *infinite* difference there is between a good man and a bad." The serious study of the history of religion would reveal to dyspeptic and thin-blooded dreamers in our own Christendom that the New Testament also is considerable, that Christ too had virtues worthy a winter's contemplation, and that nothing that is valuable in any religion is "esoteric." The fundamental message of all religions to him who studies the history of religion longest and deepest is the message—putting it in the words most sacred doubtless to most here—

of Peter and James and Micah: "God is no respecter of persons, but in every nation he that feareth him and worketh righteousness is accepted with him." "Pure religion and undefiled before our God and Father is this, to visit the fatherless and widows in their affliction and to keep himself unspotted from the world." "What doth the Lord require of thee, but to do justly, and to love mercy, and to walk humbly with thy God?"

To the religious pioneer the study of religious history gives courage. "A great licentiousness," says Emerson, "trends on the heels of reformation." Every great period of religious transition repeats the history of the Protestant Reformation. Where Luther's gospel made one religious man, it simply unsettled ten, undermining their faith in the priests and sacraments and authority of the old church, while powerless to give them the new faith, since to most men a thing gets sanctity only when it gets age. Luther found it "a strange and grievous thing that the world hath become worse and worse since the revival of the true doctrine of the gospel." Again and again we find him wishing, in his hours of despondency, that he had "never begun this business with the pope." But this is only in his hours of despondency. His common word is, "This is what was to be expected, this is the way of the world. I know my quarrel and cause are just. I will fight it out." He was right. This was and is the way of the world. The rising new faith of an age will ever draw the faithless to its standard, not because they spiritually apprehend the faith, but because they are tickled by the novelty, the negativeness and the idol-breaking.

The new faith of each age must be prepared to see itself in its own day the creator not chiefly of a deeper faith among the masses of mankind, but rather of unfaith—destroying, as it does, false sanctions, which were nevertheless sustaining and commanding, and which only the idealizing influences of time can teach the multitude to see in itself. Such are the birth-throes by which new truth comes to society and to the soul. This is the great law before whose operations the reformer must school his heart not to shrink. The years shall be his justifiers; and upon their potency and their perspective the history of reformations instructs him that he may peacefully rely.

I have intimated how important to the understanding of a people is the understanding of its art. Nowhere do we come closer to a people's spirit or a people's ideal; nothing better measures or reports a people's attainment or its aspiration than its temples, its statues, its pictures and its songs. Who is at home with the Athenian people, that is not at home in the Parthenon? Who will study Florence, and skip Michael Angelo? How many are the lessons in history which Wells Cathedral has for Freeman! How pregnant a hand-book in history is Hegel's *Esthetics*, with its survey of Orientalism, Classicism and Romanticism! How didactic and multipotent to the sensitive student of Germany are Wagner's *Tannhäuser*, the *Reformation Hymn*, and the *Wacht am Rhein*!

Only the poem comes more directly out of the heart of a people than its pictures and its music. The poets are the greatest and the truest of all re-

porters, unless it be the prophets who make the Bibles of men—truer reporters, perhaps, than these, as dealing rather with what is than with what ought to be. One of our scholars has devoted his life to the expounding of what he calls the Literary Bibles, the books in which a nation or an epoch has found its literary expression in the same comprehensive and representative way in which in other books it has found its religious expression. Homer, Dante, Shakespeare and Goethe, these four, exponents of the spirit of the old Greek world, of mediævalism, of the Renaissance and of the modern time, are the writers of the Literary Bibles in the full and high sense which he means; and whatever else the student of history studies, surely he should study these. One urges that Æschylus should also here have place, as the deep voice of the riper age of Greece. Who of us does not think of many a poet who might profitably and properly be made the foreground or the vivifier or the best commentator in the study of a great movement or of an epoch—a poet who, in a greater or a lesser way, is an incarnation of the spirit of the time? How naturally and significantly the life and works of Milton thus find place in the study of the times of Milton, as Mr. Masson has so faithfully shown! In no case, perhaps, can an age be so thoroughly comprehended by the study of a single man as the age of Dante by the study of Dante's life and works. Says one of our most thoughtful and learned American scholars:*

"It has often happened that the thought and life

*Joseph Henry Allen, *Fragments of Christian History*, vol. ii, essay on Dante.

of an historical period have been impersonated in some one man of genius, who has been its type and embodiment for later times. Thus—to take the best known cases—the speculative genius of Greece is summed up in Plato, and the scientific in Aristotle; the romance and passion of the Renaissance are mirrored in Shakespeare, the ideal side of Puritanism in Milton, and the eighteenth century in Goethe. There are only two examples where a single life has in this way taken in and reproduced an entire period or phase of civilization, so as to stand alone as its sufficient monument. As Homer represents to us the pre-historic age of Greece, and as his verse bears down to us the melody and splendor of a time which we are only beginning to see by glimpses from other directions—so in Dante we have a transcript or reflex, curiously complete, of the many phases of mediæval life, in a form at once ideal and intense. All the glow of its romance is behind the transparent veil he has woven about his own 'New Life.' All the ardor of its faith is seen in the visions of unutterable glory that crowd his 'Paradise.' All its subtilties of speculation are found in the arguments and comments of his 'Banquet.' The terrible or revolting realisms of its creed fill the thronged circles of his 'Hell.' Its whole scheme of redemption is displayed in the steep ascents of his 'Purgatory.' Its partisan passion, its capacities of pride, wrath and hate, come to a hot focus in some of his 'Epistles,' or are reflected in the incidents of his career. Its fond dream of universal sovereignty, its allied ideal Empire and Church, has its completest expression and defence in his treatise on the Divine right of 'Monarchy.' There

is no other name in literary history which is in anything like so large a sense a representative name."

I have quoted Carlyle's word about Marlborough getting all his English history from Shakespeare's plays. He surely might have gone to a worse place for his English history. We surely need to illuminate our Hume and Stubbs and Hallam with Shakespeare's "Lear" and "John" and "Richards" and "Henries;" nor can we afford not to supplement Plutarch and Mommsen with his "Julius Cæsar" and "Coriolanus." So, too, in the study of our own colonial history, we cannot afford to neglect "The Courtship of Miles Standish," "The New England Tragedies" and "Evangeline." In the study of our Civil War, we cannot neglect "The Present Crisis," "The Biglow Papers" and the "Commemoration Ode."

What are the lessons of political history for us? Here is one of them, formulated in the words of Washington's farewell address: "Let me warn you in the most solemn manner against the baneful effects of the spirit of party. Its common and continual mischiefs are sufficient to make it the interest and duty of a wise people to discourage and restrain it. It serves always to distract the public councils and enfeeble the public administration. It agitates the community with ill-founded jealousies and false alarms, kindles the animosity of one part against another, and makes the public administration, according to the alternate triumphs of different parties, the mirror of the ill-concerted and incongruous projects of faction rather than the organ of consistent and wholesome plans digested by common counsels and modified by mutual interests. However such combi-

nations or associations may now and then answer popular ends, they are likely, in the course of time and things, to become potent engines by which cunning, ambitious and unprincipled men will be enabled to subvert the power of the people."—Friends and fellow-citizens, these are not simply the words of Washington; they are the words of the centuries, the words of Greece and Rome and France and England. The careless man may laugh at the violences and magnified antagonisms of our political campaigns, at the perversion of truth, at the abuse of men, at the lapse of courtesy, of charity and of justice, at the postponement of the public peace for the party gain; but the man who knows history will not laugh.

Political history teaches us that a people is always in a bad way whenever its high offices are sinking in dignity and prestige, its nominations and elections controlled by considerations of immediate expediency and not by the question as to what is best and bravest. The joke in the last newspaper illustrates what I mean, the more because it is a joke and all men laugh at it. "Who is the candidate?" asks the first colonial patriot of the second, in this story, "George Washington." "Can he carry the State of New York?" "He can." "Then I am for him."

Political history teaches us that the "barrel" did not appear in politics for the first time yesterday, or in America. The "barrel" was extant in Athens during that closing period of the Peloponnesian War and afterwards; and I think we read in immediate proximity of the "Thirty Tyrants." The "barrel" was extant in Rome after the Carthaginian war—and the power of the Senate grew; and I think we read in

close proximity of the Gracchi, and then of the murder of the Gracchi, and then already see the shadow of the distant "man on horseback." We read that the Prætorian Guards, after the murder of Pertinax, set up the office of emperor at public auction, and sold it to M. Didius Julianus, a rich senator, for some fifteen millions; and we read by and by that there was no Roman Senate, and by and by that there was no Roman Empire. I cannot speak for other men, but for myself I do not like to see any man nominated to high office in this republic, who would not have been nominated just the same, had he not been a millionaire. As I read history, that is not promising. As I read history, that is not the way in which republics have shown that they felt character and brains to be the principal thing. I do not find that John Adams or Thomas Jefferson or James Madison had "barrels" or made great money contributions to secure their own election; and I confess that I do not like to see the American Senate becoming an aristocratic body, a gathering of millionaires, a House of Lords.

Political history teaches us, in a word, that when luxury begins to shame simplicity in a republic, when men begin to entrust to machinery the functions of individual virtue, when the materialities and not the spiritualities get the emphasis in men's plans and their ambitions, when men laugh where they should be sober, when the many are for party and few are for the State—then it is time for the thoughtful to review the situation and to remember and solemnly proclaim that history is past politics and politics is present history. I am no alarmist, I am

no pessimist, I am surely no prophet of dark things to-day. I believe in nothing, save alone the inexorable laws of right and wrong, of cause and effect, more profoundly than I believe in this republic. I look on into its future to-day with confidence and hope. But I do see things every day that warn me that eternal vigilance is the price of liberty; and if you ask me to tell you what the lessons of history are for the republic, then I say that these are some of them. I say to you who are teachers, that if you do not make history say these things in the schools, then your teaching is lifeless and aimless. I ask you to remember, with Macaulay, that the knowledge of past events is valuable only as it leads us to just calculations as to the future, and that the history which does not do this is useless.

I wish that our American politicians lived more in history. It will be a happy augury for the future of American politics when we see our great leaders speaking, like Gladstone at Glasgow a few years ago, with equal devotion and with equal power, at morning before excited thousands upon the questions which shake the State, at evening before a great university upon the enduring lessons of history and religion. Study history broadly and deeply, said Gladstone to the Glasgow students; that will elevate you to the impartiality which makes men the truest servants of the State. It is because Gladstone himself has studied history broadly and deeply that he is the man that he is to-day, strong amidst weakness, clear amidst confusion, healthy amidst fevers. I do not say that we are without such men. The recent oration of Senator Hoar at Marietta, upon the founding

of the Northwest, proves that we are not without them. But I wish that we had more of them—as in the earlier days of the republic we did have.

I wish too—and this is my last word—that our politicians and our teachers and all of us might take a more religious view of our own history. It is good that those who lead us in our politics should have much to do with religion, that they should look at to-day's debate and to-day's election and all to-day's excitement against the background of eternity. I like to hear of Gladstone reading the lessons in the little parish church in Hawarden, as he always does when at his country home. I like to know of the religious earnestness of our Massachusetts senators. Our Mr. Long can preach a sermon on occasion, and likes to do it, and we are sure the sermon can never be poor. Our late governor, Mr. Robinson, is at the head of the Sunday-school of his little church in Chicopee, and his interest in his work there was always as unflagging as in his gubernatorial duties. The sneers of our party newspapers at "Sunday-school politicians" are not edifying. I do not enjoy them. I note that these "Sunday-school politicians" are generally men who oppose conscience and individual conviction to party machinery and party dictation. I like to read that Mr. Harrison, our President-elect, is an energetic Presbyterian. I am not a Presbyterian, but I am glad that he is an active religious man. I do not like what Gladstone writes about the Pentateuch, but I am glad that, in the midst of a hot political campaign, he can write solid articles about the Pentateuch. I should be exceedingly glad to hear that Mr. Reed, of Maine, and Mr.

Scott, of Pennsylvania, were reading Job, and that Mr. Riddleberger and Mr. Gorman were taking a course in the penitential Psalms.

But this is not what I mean. It is good that our statesmen should be religious; but what I wish is that we might all look at our politics and our history itself religiously. That is what elevates history—the thought of God in history—and that is what makes political action great. We sometimes smile at the Chinese when they call themselves the "celestials," God's own peculiar children; at those old Jews who loved to call themselves "the chosen people;" at Dante laboring to prove by appeal to the miracles in Livy that the Roman nation was the one divinely commissioned nation. And yet it was a great and noble thought. The exclusiveness was not noble, but the fundamental idea of a divine calling and commission was sublime. That is what I wish we might have in this republic. I wish that we might feel that our State was Church, that God is in our history, that politics is religion, as Moses felt it and David and Samuel and Isaiah. I cannot think that David felt himself doing anything unkingly, writing Psalms. I like to read of Solomon taking things out of the priests' hands and saying the prayers himself, at the dedication of the Temple. I think it would not have been safe to rebuke Prophet Isaiah or Prophet Samuel for "preaching politics." I think, moreover, it would not have been safe to rebuke those old Puritan ministers. It is a poor, pale, later time that has divorced politics and religion. Almost the whole of Jewish prophecy is politics. Their politics has become our religion. I wish that

our own were that. I wish that when the American preacher desires to show most plainly the finger of God, he might do as Stephen did, and recount the history of his people. I think that in some future time some apostle to the Americans will write in the same high religious strain of the long line of American patriots and prophets who have greatly kept the faith, as the writer of that sublime chapter in the Epistle to the Hebrews chants the fidelity and the vision of the heroic souls of Israel.

Faith, he will say, is the substance of things hoped for, the evidence of things not seen. For by it the fathers obtained a good report. By faith Columbus sailed through unknown seas for many days, mid perils of wind and perils of water, mid perils from faint hearts, mid perils from false brethren, and revealed a new world, and died, knowing not what he had seen. By faith Isabella, the queen, sustained him mid the mockings of the great and the wise in their generation. By faith Hooper and Latimer and Ridley went up to God in flames, choosing death rather than falsehood, and scattering by the flames the seeds of purer religion; before their translation having this testimony, that they pleased God. But without faith it is impossible to please Him. By faith Puritanism, beginning even as a grain of mustard seed, brought forth Eliot and Hampden and Cromwell and Milton and Vane, and planted New England. By faith John Robinson and Elder Brewster, being warned of God of things not seen as yet, moved with fear, took refuge in Holland, to the saving of their house; by the which they became heirs of the righteousness which is by faith. By faith the Pilgrim Fathers,

when they were called to go out into a place which they should after receive for an inheritance, obeyed; and they went out, not knowing whither they went. By faith they prepared the Mayflower. By faith they sojourned in the land of promise as in a strange country, with Winthrop and Cotton and Hooker and Roger Williams, heirs with them of the same promise. For they looked for a city which hath foundations, whose builder and maker is God. Therefore sprang there of them so many as the stars of the sky in multitude, and as the sand which is by the seashore innumerable. These all died in faith, not having received the promises, but having seen them afar off, and were persuaded of them and embraced them, and confessed that they were strangers and pilgrims on the earth. For they that say such things declare plainly that they seek a country. And truly, if they had been mindful of that country from whence they came out, they might have had opportunity to have returned. But when the ship returned, at the end of the winter of death, not one went back, "no, not one looked back, who had set his hand to this ploughing." Wherefore justly might they boast that "as one small candle may light a thousand, so the light here kindled hath shone to many, yea, in some sort, to our whole nation;" and justly might their brethren beyond the sea declare that "the memory of this plantation shall never die." By faith Increase Mather declared that the people would sin against God if they surrendered their charter. By faith the walls of Quebec fell down. By faith Samuel Adams and Patrick Henry, when they were come to years, refused to admit of bondage, not fear-

ing the wrath of the king. By faith they scorned the briber, choosing rather affliction with freedom than to enjoy the pleasures of sin for a season. For they had respect unto the recompense of the reward, and endured as seeing that which was invisible. By faith Washington drew his sword. By faith independence was declared by a nation that was not yet a nation. By faith the farmers stood at Bunker Hill, by faith they endured at Valley Forge, by faith they conquered at Yorktown. And what more shall I say? For the time would fail me to speak of Lafayette and the faith which worked mightily for us in other lands; of Franklin and of Madison and of Hamilton, who by faith brought us out of confusion into order; of Lincoln also and the noble army of those who redeemed the land from slavery; of Garrison who worked mightily with the press, and Phillips on the platform, and Parker in the pulpit, and Whittier in the song, and Sumner in the Senate, and John Brown on the scaffold; of faithful soldiers coming up from lowly homes and lying down in unknown graves; of faithful women, who out of weakness were made strong, giving up brothers and sons and husbands. And some had trial of bonds and imprisonment, in Libby, in Salisbury, in Andersonville, yea, moreover, of cruel mockings and torture, being destitute, afflicted, tormented; of whom the world was not worthy. These all, having obtained a good report through faith, received not the promise, God having provided that their work should be made perfect in ours. Others labored, and we have entered into the fruits of their labors.

Wherefore, seeing we are compassed about with so

great a cloud of witnesses, and that with so great a price this freedom has been purchased, let us lay aside every weight of sloth and selfishness, and the sin of partisanship and pride that doth so easily beset us, and let us run with patience the race that is set before us. Let us walk worthy of our great inheritance, let us be creditors of the future even as we are debtors to the past, and let us know assuredly that the spirit of history is the God of nations, whose other name is Justice.

II.

SCHOOL-ROOM VENTILATION.

BY GEORGE A. KIMBALL, CIVIL ENGINEER, BOSTON.

To an intelligent audience it is unnecessary for me to prove the importance of good ventilation. Of all rooms occupied by persons, there are none that require so much study and careful attention in the matter of ventilation as the school-room. We frequent churches and public halls only occasionally and for little over one hour at a time, while the scholars are in the school-room five hours for each of the five days in the week. In our homes we have from four to seven rooms for a small family, with perhaps two thousand cubic feet of air space to each person, while in the best school-houses only about one-eighth that amount of air space is thought necessary. Many of our school-rooms are so crowded that the air space is less than one-half the standard. From Massachusetts records I have selected the following *facts* which are not the average but the *extreme*. Great Barrington reports a school-room with only 137 cubic feet of air space to each pupil. North Adams, 95. Boston, 105. Fall River, 83. Springfield, 114. Lynn, 132. The figures from the schools of New York city would show that they are more crowded than those above quoted.

It is true not only that children are *more* susceptible to the influences which produce disease than adults, but also that the first and most marked effects of breathing impure air are manifested upon the brain causing a feeling of dullness, mental inactivity and sometimes headache. It will be seen, therefore, that these results interfere directly with the objects for which the school exists, viz: the intellectual advancement of the pupils.

In testing the amount of impure air in a room it is the custom to measure the quantity of carbonic acid gas. Atmospheric air when pure contains about four parts in 10,000 of carbonic acid gas. Dr. Parks, one of the highest authorities, says that air which contains more than six parts in 10,000 is unfit to breathe. Now I will give you a few actual measurements of carbonic acid gas in some of the school-rooms of which we have record. A few school-rooms in Lynn, Mass., in 1878, contained the following parts in 10,000, viz: 18 17, 12, 29, while the air out of doors at the same time was 3.69 parts in 10,000. In Nashville, Tenn., in 1878, the following parts in 10,000 are reported: 29, 15, 12, 27. I mention these figures to show the unhealthy condition of our school-rooms, and the proposition is further proved by teachers and pupils with headache, pale faces, etc., which usually recover after a few weeks of out-door air and exercise.

To secure proper ventilation of a school-room there are certain fundamental principles or results that we must aim for. First, make your school-rooms of ample size, not less than 250 cubic feet of air space to each person and 20 sq. ft. of floor space. Provide ample means for introducing into the school-room a

large amount of fresh air moderately heated and further means for the rapid removal of the foul air.

What methods should be adopted to secure the above results is a question that has been much discussed; the plan that has worked well in one building has been a failure in another. The matter has received more attention, and more progress has been made during the past few years than ever before, and to-day we have a few examples of school-rooms that are fairly well ventilated. A very good plan for heating and ventilating where steam is employed was first used, I think, in Bridgeport, Conn.; it was designed by W. R. Briggs, and since has been built in Newton, Mass., and other places, and has given good results. The fresh air is brought into the basement through a large cold air box and is heated by passing through a series of steam coils so arranged that one or the whole can be used according to the temperature. From the coils the fresh air passes into the school-room at a height of eight feet above the floor; the teacher can regulate the amount of incoming air by a valve. The foul air is removed by passing under the teacher's platform into a large shaft where heat is applied, causing a rapid upward movement of the foul air.

The Connecticut State Board of Health published in their 3d annual report a series of experiments made on this method of ventilating and present good results. This plan gives the best results where steam is used. In the Claflin schools in Newton furnaces were used instead of steam and gave results that were very satisfactory, but the steam has advantage over furnaces.

There are many school-rooms where *stoves* are used for heating. Good results have been obtained by the use of *jacketed* stoves and I would recommend to any one interested in this subject to read the paper by Dr. J. G. Pinkham on the ventilation of school-rooms heated by stoves, published in the last annual report of the State Board of Health of Massachusetts, giving the results of this method as used in Lynn for the last two years. I believe that this system may be used in many of the smaller school buildings without great expense.

By this method it is the custom to use a large sized, ordinary coal stove which is surrounded by a jacket of galvanized iron, six and one-half feet high, leaving a space all around between the jacket and the stove about eight inches wide; from the bottom of the jacket the cold air box is connected with the open air, the air passes through the cold air box to the stove where it is heated, and thence into the school-room over the top of the jacket six and one-half feet above the floor, and the foul air is removed from the floor of the room by means of large shafts which are heated by small stoves, thereby creating a rapid upward current.

I will quote a few figures from the paper of Dr. Pinkham to show the good results of a properly ventilated room.

The carbonic acid in an unventilated room at 11.30 A. M. was 20 parts in 10,000, while at the same time in a ventilated room it was 7 parts in 10,000; in another unventilated room at 10 A. M., 28 parts in 10,000, and in a ventilated room at the same time 7 8-10 in 10,000. The even temperature in the several parts of the room

is a matter of interest; the difference in temperature between the floor and the breathing line is 3 8-10° less in the ventilated rooms than in the unventilated, and this room recorded as *unventilated* was supplied with a vent flue 6½x21 inches and with window boards, but the flue was cold, consequently no draft, and the window ventilation was inadequate; of course we should *aim* to secure the same temperature for the floor as at the breathing line; the ventilated rooms show much progress in this direction, the temperature of the floor being 3° or 4° lower than at the breathing line, while in unventilated rooms 10° difference is not uncommon.

Ducts or flues for the removal of foul air should be of ample size, for an ordinary school-room not less than 30 inches in diameter, and must be supplied with heat or other means to secure a rapid velocity—a ventilating flue that "won't draw" is worthless—and to secure a good draft it must be heated or a current produced by mechanical means; it should be as *straight* as possible, and must in *all cases* be carried through the roof to the open air—and not terminate in the attic. The ducts should be made of metal; galvanized iron or tin pipes give good results. The inlet from the school-room should be larger than the flue, and covered with a coarse wire screen of about one inch mesh. The *registers* so often used are a great obstruction to the free passage of the air.

Now to obtain good ventilation for school-rooms will increase the amount of fuel required, but the tax-payers can well-afford to pay the extra expense. In Lynn they estimate the increased cost of fuel at $15 per year, per room, and I fully believe that no

one would object to that small sum for an ample supply of pure air.

A very simple arrangement and quite inexpensive is the window board. It is a plain board six or eight inches in width and as long as the window is wide; the board is placed edgewise on the window sill about two inches inside of the sash, the lower sash is raised a few inches and the incoming fresh air is directed upwards by the board; the air also passes through between the upper and lower sashes. I can hardly conceive of a district too poor to furnish this simple means of ventilation, which although inadequate is much better than none.

In unventilated school-rooms the *teachers* can do much to secure fresh air at *stated intervals.*

Many of our teachers say that they have no time to give to this subject; that the work of teaching the lessons, drilling their pupils, and fitting them for promotion, requires all their time and energy. We are also aware that our school committees usually judge of the teacher's merits by the work he gets from the scholars, by their average per cent., or the number that are entitled to promotion.

Many of the so-called best teachers are so fully absorbed in the work of teaching that all sanitary rules are neglected. In making with the board of health a sanitary examination of all the schools in a large city in Massachusetts, the writer found several rooms where the thermometer registered nearly ninety degrees, and the air was so bad as to cause each one of the visitors to retire to seek fresh air; and this condition was not even noticed by the teacher.

But our teachers will say that we have no means of ventilation. While all *must* admit that our school buildings are, as a rule, not properly ventilated, it becomes the teacher to make use of whatever means are at his command. While making the visit above mentioned we found a large proportion of the ventilators closed, and on inquiry the teacher said they were of no use. Nearly every school-room is provided with a sufficient number of windows to secure ventilation. Although this is an awkward and inconvenient method of ventilation, it is not a valid excuse for none at all.

Great care should be exercised when the ventilation is by the use of the windows, as frequently the scholars are subject to drafts of cold air that may cause a more serious trouble than the breathing of impure air. A good method practiced by many teachers is to open all the windows once each hour, and while they remain open the scholars enjoy a march or practice calisthenics.

DISCUSSION.

Ex-Supt. A. P. Stone, of Springfield. One would think that the air at the rear of the room would not be so well heated as that next to the platform; but it is found to be. What makes the difference and causes the circulation?

Mr. Kimball. I cannot explain it, but I am convinced of the fact. The matter has been very carefully examined by the Connecticut State Board of Health, in a school-house in Bridgeport. Smoke was introduced, and it completely traversed the

room. Experiments were made with a dozen thermometers placed in different parts of the room, and the variation in temperature was very slight. Some claim that the foul air should be drawn from the top of the room, for they say that the foul air accumulates at the top. Experiments on that basis have been made and it has been found that the scholars did not receive any benefit from the fresh air.

Mr. D. N. Camp, of New Britain. After the building was erected, were there not some modifications?

Mr. Kimball. I did not know that there were.

Mr. Camp. I think there were; but it is a successful method, and experience bears out all that has been said of its excellence.

Dr. W. W. Waterman of Clinton, Mass. In case the cold air box enters from the outside and a shaft goes up through the building, the result is similar to that in case of steam heating.

[Dr. W. explained this system, so simple and effective, when it is not convenient to ventilate by furnace.]

Mr. J. F. Blackinton, of Boston. How is it when the hot air is admitted from under the floor?

Mr. Kimball. When the hot air enters through the floor, experiments show the circulation to be inferior to that caused by introducing the hot air higher up.

Mr. A. G. Boyden, of Bridgewater. Is there anything to prevent cold air from coming down the ventilating shaft?

Mr. Kimball. There is a valve in the shaft. Each teacher controls it for his own room. On a windy

day one room may receive too much air, unless the valve be used.

Mr. Boyden. What regulation is there, when the hot air comes in too fast? Is there any arrangement for regulating the air when it comes through the shaft into the room from under the platform?

Mr. Kimball. Yes. There is a board, which swings back and forth, and can be closed entirely, or can be left entirely open. If the cold air is likely to strike the steam coils and freeze them, this board may be used to prevent the trouble.

III.

ENGLISH IN THE HIGH SCHOOL.

BY W. H. LAMBERT, PRINCIPAL OF THE B. M. C. DURFEE HIGH SCHOOL, FALL RIVER, MASS.

The history of education is a record of the battle of progressive ideas with conservative tendencies. Every new method in the training of the mind has been adopted only after a hard contest with prejudice and ignorance. If one were to personify modern education he would give it the features of Bryant's Freedom, whose "brow is scarred with tokens of old wars," whose "massive limbs are strong with struggling." When the reformers of the sixteenth century attempted to introduce Greek into the curriculum of studies, they were met with ridicule and contempt, and *Graeculus iste* became for a long time a synonym for a heretic; and in these later days we have witnessed the struggle attendant upon the introduction of the study of the sciences.

The latest applicant for admission into the school program is the mother tongue. While in some form the study of English has long been a part of school education, yet its importance has not been generally recognized, and in only a few schools has it been coordinated with other branches. Yet its claims are such that it should be assigned the first place in the

curriculum; and to this end many of the studies that now crowd the course should be removed altogether or properly modified in amount and character. What are some of the claims which lift the study of English into so great importance? First, its immense practical value. Language is the instrument of communication among men, and the man who can most readily find fit words for the expression of his ideas will best succeed in the affairs of life. Second, the power which it gives over one's own thoughts. It has long been a question of debate whether thought can exist without words. However that may be, it is certain that no thought can be grasped and made clear to consciousness without being clothed in language. Accuracy of expression begets clearness of thinking. The long and often bitter controversies in literature, politics, science, art, have their origin usually in inaccuracy of expression. At the end of a long debate, after a proper definition of terms, men have often been surprised to find that they had no question of discussion—that they had been tilting at the same shield. Third, the power which a knowledge of language gives for getting the thought of others from the printed page. In books is recorded the wisdom of the ages. In books, magazines, newspapers is stored the information we would share with our race. Our magnificent literature offers to us a wealth of enjoyment such as cannot elsewhere be found. But these treasures remain forever closed until a knowledge of language opens to us their store. Fourth, the mental discipline which a careful study of English affords. It trains the memory, the imagination, the reason. It furnishes the highest

tests of intellectual power. Matthew Arnold used to maintain that a candidate's fitness for entrance to the universities should be based upon his ability to paraphrase select passages from the English classics. Add to this development of the mental faculties, the training of the moral nature through an acquaintance with what is best in our literature, and the study of English stands unrivalled as an instrument of culture.

Since language is the instrument of thought, it is thought itself symbolized; and since capacity for thought and thought expression is the measure of intellectual power, and an important factor in determining character, it follows that all studies should lead up to language, and should have their issue in this. The place, then, which the study of English should hold in a school program it is not necessary to pause to discuss. The question is one of methods only.

It is proper to assume that the pupil, on entering the high school, has a fair knowledge of grammar, that he understands the one or two English concords, that he can readily distinguish the office of words in propositions, and can analyze sentences, both simple and complex,—that is, that his power of generalization and his logical faculty have been so far developed as to enable him to comprehend something of the science of grammar. He is now ready for the study of the right ordering of sentences with respect to adjuncts, and the more artistic and effective construction of propositions.

Rhetoric succeeds grammar. The study of style follows that of simple word relations and grammatical forms. It is not enough that the pupil can speak

and write in keeping with syntactical rules; to correctness he must add purity, precision, perspicuity and strength. Too much stress cannot be laid upon the study of rhetoric, the end being, not simply to gain a knowledge of its theories and principles, which lead merely to barren criticism, but by a constant practice in the application of its laws, to acquire skill and readiness in composition. Etymology of words, synonyms, figures of speech, the various qualities of style,—all should be so dwelt upon as to leave a permanent impress on the mind of the pupil. It is only by a definite plan, carefully pursued, that the pupil can be taught to write with grace and power.

One reason why essay or theme writing so largely fails of its object to effect improvement in composition is that the exercise is conducted without plan or well understood purpose. The student is required to produce an essay upon a given subject. He gathers, with great industry, words and phrases without relation or meaning, and presents the result to his teacher. The latter puts it through a process of correction, noting here an error in orthography, there a solecism in grammar, and elsewhere a mis-statement of facts. The work of the teacher covers so much ground that the attention of the scholar is not fixed upon any single important feature of composition. The teacher, in scattering his instruction, is able to drive nothing home.

Composition writing, like any other study, should be pursued as a class exercise; each pupil, under the immediate guidance of the teacher, working out the topics of instruction. Formal essay writing should not be attempted until the elements of com-

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position—that is, rhetorical rules—have been completely mastered. The pupil cannot do two things at a time. He cannot at once find material for composition and attend to the style of expression. The style, by long and faithful practice under the guidance of the teacher, must be made a habit, so that without effort the thought will take a shapely form.

It is claimed that, within recent years, certain judicious reforms have been effected in the matter of composition writing. The impossible virtues which nobody knows anything about have given place, as subjects, to social, historical and political questions, concerning which a few people do pretend to have some knowledge, but of which happy few the pupil unfortunately is not one. Therefore, when these topics are presented, with the confidence of assured success, he resorts to the cyclopedias and other books of reference, and in due time presents what? words and phrases empty and meaningless, sentences without force or significance, a garment of shreds and patches. The empty mill can grind no corn. If the mind has no material upon which to act, of course, there can be no thought, and hence no expression. Facts, or ideas, thought, expression is the order. The first wanting, the others must fail perforce.

Another defect is the assumption that pupils, immediately upon entering the high school, have donned the *toga virilis*, that in passing from the grammar school, by some mysterious presto-change process they have ceased to be children, and have suddenly attained their intellectual majority. From a concrete world of realities, they pass into the empyrean of abstractions. By the suddenness of the transition

their vision is dimmed, and their footing made uncertain.

In the lower grades the exercises in language have been based upon facts within the horizon of the pupil's own experience, or upon material furnished by the lessons which are the subjects of daily study. It is in the same line that the work in the high school should be carried on. Abstracts of the reading lesson, transcriptions of elegant passages from classical writers, then a reproduction of the same from memory, imitating the beauties of style and the turns of expression, paraphrasing of appropriate selections, changing poetry into prose, summarizing lessons in history and science, such are some of the means at hand for training in language. Nor should these exercises be practiced irregularly and at wide intervals. No day should pass without an exercise in composition by every scholar. It is by much writing that facility is occasioned. By practice the will easily marshals the thoughts, that troop in orderly array out through the finger-tips. If young people are to be trained to exactness in thinking, they must be taught to write out their knowledge. "Writing makes the exact man." A lesson is more firmly fixed by writing it out than in any other way.

Parallel with the study of rhetoric and beginning with the entrance of the pupil into the high school should be pursued a course in the reading of English classics. Not a desultory and spasmodic reading, here a selection and there a passage as the impulse of the teacher may suggest, but a reading based upon a definite and carefully considered plan. The end to be gained is three-fold: (1) to give the pupil

an acquaintance with the English writers and their most celebrated works; (2) to create in the pupil an ability to discover and appreciate beauties of style and felicities of expression, and thereby, by imitation, to improve his own skill in composition; and (3) to form a taste for good reading, which shall become a part of the pupil's equipment on leaving school, and which shall fit him for the enjoyment of what Carlyle calls "the university of modern times," a collection of good books.

This reading, under the guidance of the teacher, should be continuous from the beginning to the close of the high school course. This is not the fitting time to discuss the manner in which the teacher should proceed with the instruction in this subject; but it is evident that the method should conform to the end for which the study is pursued. If the purpose is to lead the student into a vital knowledge of the living thoughts of the author, to set his pulses athrob with the emotions that thrilled the heart of the writer, to make him capable of being lifted up by the great truths of superior minds, to create in him a faculty for appreciation of world famous compositions as works of art, and a critical ability to feel the difference between what is chaste and elegant, and what is coarse and uncouth, between broadcloth and fustian, then it seems to me that the practice often followed, of making a beautiful passage of prose or verse a convenient peg on which to hang, for an airing, all sorts of garments, explanations and expositions, social, political, historical, etymological, and the like, is aside from the purpose. Let us stick to the law of one thing at a time.

Another valuable exercise in the way of language training is that of memorizing selections from English prose and verse. The lack of ability exhibited by young people graduates from our schools, to repeat from memory famous poems, either entire poems or extracts, and passages from the great orators and prose writers, is lamentable indeed. In this phase of our school work we are behind any other nation in the world which makes any pretense to a system of education. An examination of a book published in London by A. Somenschein, entitled "Standards of Teaching of Foreign codes relating to elementary education prescribed by the Austrian, Belgian, German, Italian and Swiss governments," shows that the memorising of passages from the best writers of the national speech, is made a prominent feature of instruction by the order of governmental authority. The English code prescribes exercises of this nature throughout the entire school course. The program of studies authorized by the French government insists upon the same exercise. But among us there is no uniformity of practice. In a few schools of the primary and grammar grades, something in this direction is attempted, and is made a requirement of the course of study. In the high school, however, except what is done in the form of declamation, there is, so far as I am aware, an absolute neglect of this sort of training. Macaulay being unable on shipboard to procure a copy of Paradise Lost could entertain himself by reproducing from memory entire books of that great epic, and it is said that the average English boy from the university is able to illustrate by ample and judicious quotations an in-

telligent talk on the English poets from Chaucer to Tennyson. What American boy from high school or college can approach such ability as that? How many boys in our high school can do the same thing concerning any three of our American poets? Our neglect in this matter is shameful, and should be completely repaired. All of the famous minor poems and typical and noted passages from the great poems and prose works of our classic English and American writers, should be made a part of the memory treasures of every boy and girl who leaves our schools.

Another aid in teaching language is verse making. The old teachers of Latin used to make much of exercises in metrical composition. The writing of verses was required at all the great English public schools, and the boy who was able to make correct verses at his university examination, not only gained high praise for himself, but added new feathers to the wings of his masters' fame. This exercise has been unsparingly ridiculed by modern writers on education. Yet I believe the old schoolmasters knew what they were about. From their point of view, with the end for which Latin was taught full in mind, they undoubtedly employed the most successful means which ingenuity could devise and experience suggest. A knowledge of Latin, not of English, was their purpose, and what could contribute more effectively to the enlargement of the pupil's vocabulary than a search through the memory and the lexicon for metrical equivalents and synonymous terms? Such an exercise, it seems to me, could be made most effective in teaching English. Mr. Seeley, in his "English Lessons for English People," devotes one

half of the book to the study of versification, on the ground that a knowledge of the laws that govern verse is necessary to a proper reading and understanding of it. Add to the study of metre, the practice of verse making itself, or the application of the principles which are the objects of the study, and you not only fix the knowledge sought, but also give one of the very best lessons in developing the power of expression. It is not to be expected that these exercises should contain original thought, it is enough that the material be furnished,—a short narrative or a fitting sentiment. I once made a trial of this, and found my expectations more than realized in the rapid progress made by the class in facility and correctness of expression. I encountered only one difficulty. Having led the class so far up the Parnassian heights, all its members wanted to write the class poem for the public exercises at their graduation.

Another means contributing to the training in English, is the study of Latin. Of the pupils that enter the high school, probably three-fourths select the study of the Latin language. They are moved to this not only from an inherited impulse to worship an educational fetich, but especially because of the stress laid upon the importance of this study by the school authorities. Every scholar who is to take a four years course in a high or other secondary school should, in my opinion, spend two years in the study of Latin. But in the methods of instruction the teacher should constantly keep in view the end to be obtained. What is that end? Is it that the scholar may be able to use the ancient Roman speech for the communication of his thoughts? We know that

Latin is never employed in these later years as a vehicle of expression outside of a possible ecumenical council. Is it to make the pupil familiar with Roman literature, to bring him to a point where he can appreciate the eloquence of Cicero, and the art of Livy and Tacitus; or to feel the consummate grace and sweetness of Virgil, the delicate wit of Horace, or the "withering fire" of Juvenal? Or, to use the words of Dr. Johnson, to enable him to read a Latin author "with his feet on the fender?" Such an acquaintance with a modern language is expected to be obtained even in secondary schools; but to gain such a knowledge of Latin in these schools is an impossibility. It is safe to say that of the young men, or young women either, who are graduated from college, not one in fifty can read without the use of a lexicon a chapter from Livy or Tacitus. In what, then, does the value of the study of Latin in the secondary school consist?

First, in a knowledge of the etymology of English words. So many words even of our common speech are of Latin origin, that it is doubtful if a full appreciation of their force can ever be gained without a study of them in their original forms. In the study of Latin words, the attention of the student should be constantly directed to their English derivations, to the effect of affixes and suffixes on radicals, and to Saxon equivalents.

Second, in the enlargement of the pupil's vocabulary. Nine-tenths of the words the scholar meets in his Latin, have their corresponding forms in English. The fixing of the mind upon these words, by studying them in the original, and by using them in sen-

tences of the pupil's own construction, is a most valuable exercise for the acquisition of new words.

Third, in the practice of rendering Latin into English. In this exercise there should be three steps: (1) construing; (2) translation; (3) original composition. In the first step the aim is to give the pupil a knowledge of the precise meaning of the Latin words and of their grammatical relations; in the second, a rendering of the thought contained in the original into idiomatic English. Of the value of a practice of translation from Latin into the vernacular—a translation which seeks an accurate reproduction of the thought, so that its force and spirit shall be preserved—as an exercise contributing both to habits of thinking and to a facility in the management of the national speech, there is abundant and concurrent testimony among all the great scholars and teachers of the world. "It is by translating," says one, "that young people learn all the laws of the art of writing." Another, no less than the philosopher D'Alembert, uses the well-known expression: "If you wish one day to be translated, begin yourself by translating." And he adds: "The work of translation will yield a rich harvest of principles and ideas, and prove an excellent school in the art of writing." Lord Brougham observes: "It is necessary to acquire correct habits of composition in our own language, first by studying the best writers, and next by translating into it." Cicero's flowing oratorical style, as he himself assures us, arose largely from his habit of translating from the Greek.

The third step in the study of Latin is composition. I have already referred to the valueless practice of

requiring original essays from young people upon abstract, and, to them, unfamiliar themes. It is the story over again of the wretched Egyptians trying to furnish their tale of bricks without the necessary straw, only their successors produce no bricks. In the Latin text the material is furnished. The thought, through the process of construing and translation, has been developed. Now let the pupil express this thought, which he himself has felt and made incarnate, in his own language, varying the form of sentences, introducing rhetorical figures, making literal what in the original is tropically expressed, expanding what has been concisely stated, or condensing the Latin amplifications. In this way every lesson in Latin is made a lesson in English,—a lesson the more valuable because the pupil not only possesses an excellent model for the manner of treating the subject, but is put in possession of sound ideas upon which to exercise his power of expression. "He who attempts composition," says Marcel, "without first laying in a large provision of knowledge, will at best deal in nothing but commonplace ideas, and conceal poverty of thought under the pomp of phraseology." I cannot better close this address than with a sentence from Mr. Thring's stimulating book on the "Theory and Practice of Education," himself a classical teacher, whose loss all England has been called upon this year to mourn. "The ultimate end," says this great English schoolmaster, "of the study of the classics, is to make the learner an artist in words and a conscious master of his own tongue."

DISCUSSION.

Dr. J. G. Fitch, of London, said that the argument in favor of more systematic study of our vernacular tongue had been stated with great force and clearness in the paper, and its writer had well vindicated the claims of the English language to a higher place in the course of a liberal education than had usually been assigned to it. In England additional importance had recently been attached by the Universities and in the public schools to the study of English. He had observed that in American schools—both in the primary and grammar grades,—simple exercises in composition and the reproduction of the substance of lessons in the pupils' own words were very prominent and useful forms of exercise, and received somewhat more attention than in the English elementary schools. He regarded this as a great merit. But there were two other forms of language discipline which seemed to him to receive more consideration in England and to be very useful. He referred to the learning of good poetry, and to what he might call "verbal analysis" and word-building, as distinguished from the logical analysis of sentences. In every step of the elementary school course the pupils were required to commit to memory whole passages of good poetry, and in the higher classes of such schools, including pupils from twelve to fourteen years of age, the extracts were generally taken from Shakspeare and Milton, or some other good English classic. Scenes from a play were often performed by the scholars taking different parts, and the whole play or poem from which the extracts were made was

read and examined, so that its meaning should be understood. This memory exercise had proved to be one of the most fruitful and interesting parts of the elementary school course. It enlarged the vocabulary of the learners, helped to form a taste for good literature and set the scholars to enquiring and reading for themselves. He thought also that the practice of analyzing words, examining the significance of initial and final syllables, observing what common element of meaning there is for example in all the words which end in *tion*, in *tude*, in *ness*, etc., and discriminating among these words those which have a Latin from those which have a purely English origin was a very valuable one. It furnished a key to the meaning not only of many familiar words, but also of many words, which though new to the scholar would be recognized by their form and structure and so be the more readily interpreted. He commended to teachers the practice of verbal analysis as a useful adjunct to the logical analysis of sentences and an instrument of mental discipline for young children hardly inferior to it.

IV.

THE HIGHER EDUCATION OF WOMEN: ITS PERILS AND ITS BENEFITS.

BY REV. L. CLARK SEELYE, D. D., PRESIDENT OF SMITH COLLEGE.

Fourteen years ago, I had the honor of addressing this institute upon the higher education for women. The college with which my life has since been identified had not then been opened for students. I had no practical experience in the work which I advocated. Implicit faith in woman's capacity, an enthusiastic determination to provide the best possible culture for it, these were about my only valid claims for the hearing which this honored body graciously accorded me. Sobered somewhat by the trials and magnitude of the work in which I have since been engaged, I come to you again at the request of your president with a similar theme, but with no slight misgiving lest your patience may already have been too severely taxed by the frequent and protracted discussion of the well-worn topic. When I consider all that has been said and written upon this subject during the past few years I despair of saying anything new. I can only hope to present some old truths in the fresh relations which individual experi-

ence may suggest, and to give them such additional force as may come from cumulative testimony.

The years at least have not diminished my faith in woman's mental ability, nor do I now feel the same necessity of discussing it. Some persons on the other side of the sea, with the rigorous, pitiless logic of statistics still draw the old conclusion,—because the average brain weight of women is less than that of men, they are therefore incapacitated for the highest educational work. Most of us in this country have passed that stage in the controversy. It is not now a question with us whether women can be highly educated;—they are. Be their brains larger or smaller they are solving with as much apparent ease as men the deepest problems of science and philosophy. The higher education of women is no longer a hope, it is a realization. Whatever may be our wishes or predictions, many women are to-day actually obtaining a mental culture as broad and liberal as that which men have long enjoyed.

One of our early historians mentions an Indian tribe which Quaker missionaries found in their first explorations in Pennsylvania, where aged women were allowed to speak in the councils, and were apparently listened to with equal respect. On inquiring the reason of a custom so unusual among the savages, although so consonant with Quaker notions, the Indian chief gravely answered; "We have found some women can speak as well as some men." With similar significance we may also say;—we have found some women can study as well as some men. Their average capacity, therefore, we do not concern ourselves about. As Mrs. Fawcett admirably puts it

"No one of those, who care most for the woman's movement, cares one jot to prove or to maintain that men's brains and women's brains are exactly alike or exactly equal:—all we ask is that the social and legal state of women should be that which should tend to foster, not to suppress any gift for art, literature, learning or goodness, with which women may be endowed.

The questions now of the greatest practical interest are those which concern the perils and the benefits attending this educational movement; and it is some of these which I would discuss this morning.

That the movement is exposed to peculiar perils few will deny. In the pursuit of knowledge, there has always been a tendency to sacrifice the physical to the intellectual. Men have ever been tempted to neglect the body in the cultivation of the mind. When one considers the multiplicity of studies taught in modern schools, the cramming, the feverish anxiety, fostered by frequent and severe examinations; and the number of hours required to learn the assigned lessons; one may naturally question whether the temptation has not increased rather than diminished. The peril is not peculiar to colleges or universities. It is even more alarming in our lower and secondary schools. I am confident the majority of teachers here will confirm the statement that more students suffer from mental over-work before than after they enter college. In college usually there is less confinement and less time required to learn the prescribed lessons, than in the high school and academy. That there are actual dangers to health, however, in our higher education, I readily admit, and I

am not disposed to under-rate their magnitude or their imminence. I admit, also, that they are greater for women than for men. Whatever may have been the original and comparative strength of the two sexes, it is evident that the average woman to-day cannot endure as easily as the average man the strain of prolonged mental effort, and of public exhibitions. In our high schools where co-educational tests have been applied most extensively and impartially, a much larger proportion of girls than boys fail in health. They may not have been in as good physical condition to begin with. Their failure may be due quite as much to their home life as to their school life. It is none the less true that their health is in greater jeopardy.

Is it then better on sanitary grounds for a woman not to be highly educated? Can she bear with less difficulty the necessary burdens of life if her knowledge be confined to the rudiments of learning? That position has been taken from time immemorial, and the physical benefits have not been so apparent as to commend it to our favor. The great majority of women have not been highly educated, and the young ladies, who attend school where excessive study is not a symptom, do not show any physical superiority over their more rigidly educated sisters. It needs little investigation to show that the health of women has suffered more from deplorable ignorance than from all our educational processes, injurious as some of them may have been. We cannot remove the peril by giving up education, but by conducting it with increasing respect for sanitary laws. We must lay greater emphasis upon the

truth that all true intellectual culture needs first a sound physical basis. We must insist that hygienic laws be observed in the homes; that food, dress and exercise be so regulated that the body may not become enfeebled before school life begins, or while it continues. We must demand more strenuously that, in lower schools, girls between fifteen and eighteen should not be confined from five to six hours a day; that there should be greater flexibility in the requirements concerning their attendance; that they should not be subjected to the nervous strain and excitement of public exhibitions; that, in short, at the most trying period of their physical life they should be treated with that supervision which a careful, thoughtful mother would exercise. It is worthy of serious consideration whether the health of our girls would not be improved if more of their mothers were represented upon our school boards.

In advanced schools for women there should be no less emphasis laid upon sanitation. Hours of rest and exercise should be required as imperatively as hours of study. Those who have taught both sexes will testify, that young women are more apt to neglect bodily exercise and to remain indoors than young men. So far as my experience goes, there is this difference between the two sexes; in intellectual work girls more often need the bit, while boys need the spur. In physical exercise it is the reverse. A woman cannot, therefore, be with safety subjected to the same discipline which young men may find most profitable. Methods which may toughen a boy, may permanently ruin the health of a girl. Greater care should be taken to reduce causes of nervous excite-

ment; to prevent her from taking too great a number of studies, or from giving too much time to them; to secure the requisite physical culture to render her body the most efficient ally to the intellectual life. By observing these precautions, if a girl is able to enter college without impaired health, I am confident she can pursue all the studies it requires with less physical risk than she incurs elsewhere.

In proof of this, may I be permitted, with a previous disclaimer of any implied superiority over other institutions, to refer to that with which I am most familiar? It is now thirteen years since Smith College opened to receive those young women, who desired to gain an intellectual culture as thorough and extensive as that offered young men in our best New England colleges. The standard of scholarship which was then adopted has been persistently maintained. During all this period, there has not been a death in any of the college dwelling-houses, nor has there been a case of alarming sickness. According to careful statistics and measurements, the senior classes are invariably the healthiest and strongest. The average muscular force steadily increases during the successive years. A record has also been kept of the graduates. Among the three hundred and fifty-five, who have completed the entire regular course, there have been only three deaths in ten years, and the diseases which proved fatal to them, had apparently no connection with their studies. I doubt whether a better record can be found among an equal number of male graduates, or among an equal number of young women engaged in other employments. In many cases the intellectual work

has proved remedial. It has furnished a wholesome tonic for weak nerves, it has given a mental equipoise which has proved a valuable antidote to morbid sentimentalism. While I am confident great improvement can still be made, and that unceasing vigilance is demanded, I have no hesitancy in saying that the higher education of women can not only be prosecuted without injury, but with positive benefit to health. The physical will share in the intellectual perfection. As the mind becomes more enlightened the body will be better cared for. The educated women of the land will exert a powerful influence in improving the sanitary conditions of their sex. They will teach better methods of training children. Dress, food, household arrangements of every sort will share the benefits of increased intelligence.

But there is another peril to which, in popular estimation, this higher education is even more exposed. It is suspected that learning will beget in women a distaste for home life and the responsibilities of maternity. The more they are educated, it is said, the less they will want to marry, and the less will men want to marry them. In proportion as they acquire a means for an independent livelihood, they will become averse to matrimony, and will lose their feminine attractions. Men do not wish pedants for wives, and they will not woo those who have lost their native delicacy, modesty and womanliness. The family, therefore, is imperilled by this movement.

That some educated women show an aversion to marriage, and have acquired manners which perceptibly diminish their womanly attractions, is doubtless true. If I am not mistaken, there were many single

women of advanced age before the era of female colleges, and many coarse and vulgar ones who are in primeval ignorance of books.

When the statement is made in one of our leading newspapers, as it was a few days ago, that "if a college education is to make women as coarse and self-assertive, as some female graduates whom we have seen, we hope they may henceforth be denied admission," it is pertinent to ask, whether the coarseness and self-assertiveness were antecedent or consequent to the college training. Until the statistics, or actual facts show that the number of unmarried women and misogamists have perceptibly increased, and the coarseness and vulgarity of the sex has become greater in consequence of the higher education it is not good reasoning to cite every unattractive single woman who has been to college, as a conclusive argument against learning. Perhaps she might have been much more unattractive if she had not been there. No college can undo in four years all the mischief which has been wrought in the preceding sixteen or eighteen, not to speak of the hereditary tendencies of many generations.

What we wish to know is, whether there is a direct tendency in college education to turn women from domestic life and to bring out traits which are unwomanly and repulsive. Are those thus educated more liable to Sidney Smith's remark concerning Mrs. Grote, "That she was the most gentlemanly person he had ever met."

Undoubtedly much of the popular prejudice in this matter arises from associating a collegiate education with professional training. So long as it is regarded

as the vestibule to the learned professions, it will seem when women aspire to it, as if they were desiring to rival men in professional life. Our colleges, however, aim simply at mental soundness, mental perfection, irrespective of its practical use. They seek to train the mind so that it may attain completeness, without reference to the particular service which may afterwards be demanded of it. There can be therefore nothing in their aim and organic structure which would unfit either sex for its destined sphere. If there be any pernicious tendency, it must be either in the methods whereby that education is secured, or in the increased ability which it gives to pursue a profession.

There may be in institutions, which have for generations been under the exclusive control and patronage of men, a predominance of the masculine spirit, and that not always of the most refined type. I will not, however, discuss to-day the comparative merits or demerits of separate or co-education. The opinions which I uttered before this body fourteen years ago I hold with the tenacity which I recognize may be one of the failings as well as the virtues of advancing years; but I have also a deeper and more tolerant sympathy with those who in other ways are doing all they can to lift from the race its burden of ignorance. That many able and charming women have been educated in colleges open to both sexes is sufficient evidence that their adverse influences can be successfully resisted. Nor have I any doubt that educated women everywhere will compare favorably in genuine modesty and refinement with those less thoroughly taught.

None the less, we ought to be most sedulous that the intellectual culture of our women be not divorced from their social. It may be unnecessary to subject young ladies old enough to enter college to the harassing regulations of an old fashioned boarding school, but it is most desirable that they should be required to observe the unwritten code which prevails in good society and refined homes. Nowhere can a woman safely transgress the well established conventionalities of womanly behavior. Her college life should be arranged so that it should promote good manners and good morals as well as sound thought. Manners and morals soon deteriorate if left to care for themselves. Where they are properly cared for, learning will prove a valuable aid. Mental culture is refining. "It is without all controversy," says Bacon, "learning doth make the minds of men gentle, generous, amiable and pliant to government, whereas ignorance makes them churlish, twart and mutinous."

As far as I can determine, there is a growing tendency in our higher schools for women to emphasize and strengthen womanliness. When female colleges were first organized and were tentatively feeling after a sound basis, there may have been a tendency to copy questionable social usages from masculine institutions. The students themselves sometimes had the feeling that they should not be regarded as quite up to the standard of a higher education, if they did not follow the traditions of their male compeers. There was a leaning towards the Oxford cap and gown, not because they were convenient or becoming, but because they seemed highly scholastic.

Ladies consented to be called professors, not because they liked the absurd epithet, but because it seemed as if they might be considered below par as teachers without it. That sort of immaturity is disappearing. Our leading colleges for women with an increasing consciousness of intellectual strength are attaining more womanly independence. The students take increasing pride in their distinctly feminine characteristics. A social atmosphere is being rapidly created in which the traits of a refined womanhood are stimulated. The young ladies are organized in homes over which cultivated women preside. There is the same regard for decorum, for behavior, which is to be found in well-bred families. I see no reason why with reasonable exertion this tendency may not increase, until these seats of learning shall be universally recognized as schools where every valued trait of womanhood is scrupulously preserved and perfected.

That intelligence in itself will render a woman less attractive, is so contrary to reason and experience, that it needs no discussion. Intelligent women have always given to social intercourse its greatest charm.

Let me also assure timid souls who fear lest education may undermine the family, that the alumnæ, so far as I can learn, marry as readily and frequently as the alumni. Those even of great brilliancy, who manifest remarkable proficiency in languages, philosophy or science, and seem peculiarly qualified to do excellent work as specialists, show often greater fondness for some favored man. There is no assurance of permanency in female teachers. No matter what their salary or success may be, no matter how inter-

ested they may be in their work, marriage proves stronger than all other claims. In fact I have had so many disappointments, that I have become an utter sceptic both concerning the superior claims of learning over a woman's heart, and concerning the inferior attractions of educated woman to men. I do not believe a word of either assertion. Last year I made a slight reservation. I said if a woman were in a position which satisfied her highest scholastic ambition, and where her mind was so engrossed with her duties that she had no time to think about love making, and no encouragement to give a suitor, she might be reasonably safe, and I cited as an example a well-known lady at the head of a popular institution. Her marriage soon dispelled that illusion. Now I make no exceptions. When the right man comes the woman will follow. The home life with the man she loves will prove more attractive than any other. The education of the intellect adds strength to affection, it increases personal charms. Intelligent men are glad to have intelligent wives; and the intelligent women find no less joy in the relations of a wife and mother. They may be less inclined in consequence of their ability to support themselves, to form unworthy and ill-sorted marriages. They may be a little more fastidious about the husbands they accept; such a result will prove no injury but a positive benefit to the family life. Their intellectual culture, if it be genuine, will make the marriage bond stronger.

Admitting, however, that women can be highly educated without losing their health or their charms, or without changing the ordinary sphere of their activity, the question still remains; is there no danger

lest their higher education may render them too unpractical? Is it not a waste of time for them to study the classics and the higher mathematics if their sphere is to be in a family, and their duties those of a housewife?

We shall all agree, when any system of education unfits either sex for the practical duties which life imposes, then it has made a great mistake, and seriously endangers the well being of society. Yes, women should be trained for service, but to serve what? Is it not a worthy service to give higher ideals of life, to discover thoughts which cheer in sadness and renew human strength and courage? Is it not a valuable service to bring to men those riches which are imperishable, which they can hold and enjoy forever? What service can they render the race equal to that which enlightens it in the ways of truth, and inclines it to walk in the ways of wisdom? When we judge a system of education by the service it renders mankind, let us have first of all a clear conception of the service mankind most needs. It would be a great mistake to leave its higher wants unsatisfied in our eagerness to satisfy the lower. There is no way, however, in which the lower wants of men will be satisfied as well, as by an education which seems to ignore them. Practical life is more indebted to the study which has sought knowledge for its own sake than to any other source. Our higher schools have sustained the lower. Geographies have come from star gazing, and arithmetic from the study of higher mathematics. As soon as men ceased studying chemistry for the sake of the philosopher's stone, they found the treasures for which alchemists had

vainly sought. The study of mineralogy has brought to light the costliest gems and the richest mines. The study of the stars has given men power to span rivers, tunnel mountains and navigate seas. Knowledge is always unexpectedly fruitful in its results. There is inexhaustible wealth in every great discovery of mind. It has infinite applications to human wants.

Considered merely as a measure of political and domestic economy for the increased wealth of the race, we should favor an education which leads woman also to seek knowledge for its own sake. I, Wisdom, dwell with prudence and find out witty inventions.

Moreover, mental faculties do not exist alone but in unison. Where one is out of tune the others suffer from the discord. Where one is diseased the rest partake of the infirmity. From how much misery would Cowper have been saved had the delicacy of his imagination been matched by strength of judgment and of will. One sided persons have always a tendency to fall into heresies and follies. They have not the strength to execute successfully their grandest conceptions. As most persons are forced by the necessities of life to confine themselves to one calling, and become absorbed in one pursuit, it is the more essential before the mind is narrowed down to its routine of life long daily work, that it should have a training which will bring out and strengthen all its complex powers. And who shall determine for us, that only this particular knowledge or that special capacity will be needed in certain pursuits? Are there not emergencies in every life which call into play the highest and most varied talents?

A mother might save a child from many a sad and fatal mistake, had she herself the broader intelligence to foresee and avert the manifold dangers which environ youthful life.

In every calling a sound mind is better than one maimed. No pursuit is beyond the domain of a true philosophy or the benefit of its application. Studies which one can use! Is not good judgment useful? Is not intelligence serviceable? Is not an inventive spirit of practical value? Is not the power to express one's thoughts with clearness, force, and eloquence, an inestimable acquisition to any one? What use to study a language which is dead! But what if that study put new life into all the languages a person speaks,—give richer thought to all one's words,—what if that study correct the judgment,—refine the taste,—produce a life long habit of clear thinking,—is that study of no practical utility?

Nothing is more useful than that which gives one keener perception and quicker apprehension for every undertaking; these are always serviceable. Knowledge is forgotten, but the faculties it has strengthened abide, and serve for higher acquisitions. Meeting the utilitarian on his own ground, I maintain that the education which for the time ignores utility, which simply aims with great care and wisdom to strengthen all mental faculties, that this education is the most useful that a woman can receive for any sphere. It secures sound habits of thought which are applicable to every employment. It makes one quick to discover and ready to adopt right methods. It brings to service an ingenuity that lightens toil and increases its results. It supplies a reserve force upon which

one may call in any of life's emergencies. Not only does it increase the number of our servants, but it adds to their efficiency. It becomes a treasure house which is never impoverished by the expenditures of life, and whose wealth is augmented by the activity it supports. A well educated mind is the most useful of all possessions and next to a sound heart the most valuable. For the merchandise of it is better than the merchandise of silver, and the gain thereof better than fine gold.

But surely we are to have a higher ideal of a woman's life than the mere satisfaction of temporal wants.

Aristotle makes a distinction in human possessions, "those are useful," he says, "which bear fruits; those liberal which tend to enjoyment." The joy which comes from the exercise of our highest faculties, from communion with the highest intelligence is also a woman's birthright, and in some way she will always seek it. This joy the higher education seeks to impart. It liberalizes the mind, gives freedom in every service. "The highest joy," says Schiller, "is the freedom of mind in the living play of all its powers."

The tendency of a training which merely prepares one to gain a livelihood is to enslave mental faculties, to make the work the master so that one can never escape from its burdens and bonds. A higher culture makes one no less efficient as a servant; it also gives one freedom in every service. In the free range of thought which it affords, it delivers one from the irksomeness of being confined to one pursuit. Condemned to toil all day as a poor clerk at the India house, burdened with the thought and support of a

sister, who most of the time was only fit for a mad house, and in her sane moments was overwhelmed at the horrible deed she had committed, the ordinary life of Charles Lamb seems doleful in the extreme. Yet who thinks of the sadness in the midst of the contagious joy of his higher intellectual life. How bravely his intellectual joys and pursuits helped him bear his cares and sorrows. And many a man has been enabled to bear successfully similar hardships and trials, through the refreshment and strength received from a higher culture than that which his profession demanded.

Every life would seem gloomy and stale but for outlooks into fairer regions than those which we are condemned habitually to toil in. And I cannot but feel that to many a woman, wearied with the humdrum and contracted sphere of her ordinary life, a new inspiration and strength would be given, were her faculties trained to find delight in those higher employments which are ever open to a cultivated mind. "If a college education does not make bread winning easier," Mr. Lowell says, "it makes every morsel of bread taste the sweeter." Did a higher education offer a woman nothing more than this, it might well be encouraged for the perpetual recreation and enjoyment which it provides for the weary and sorrowful. It makes a way of escape out of the drudgery and confinement of daily toil. After the vexations and burdens of ordinary work one may call around oneself the choicest spirits of all time and converse with them as equals and friends. The best thoughts, the brightest wits, the choicest imaginations, impart to the educated soul their richest treas-

ures. One catches the strength and joyousness with which one communes, so that when the necessities of life again demand attention one goes forth with fresh courage and strength to satisfy them. In place of dreary servitude one may enter into the company of the noblest spirits of earth, into the realm in which are hid all the treasures of wisdom. Servitude did I say? There is no servitude with such culture. Life becomes free, labor loses its fetters; in menial tasks the mind preserves its royalty and renders service with kingly or queenly grace.

Her ways are ways of pleasantness, and all her paths are peace.

She is a tree of life to them that lay hold of her, and happy is every one that retaineth her.

DISCUSSION.

Rev. J. M. Taylor, D. D., President of Vassar College.—Mr. President, I wish to call attention to the place which this general discussion holds among the educational problems of to-day. Why is it that we are asked to discuss the dangers and benefits of woman's education? Why is it that this subject has not been lost sight of in the broader question of the dangers and benefits of all education? It is generally supposed that the officers of the colleges for the higher education of women ought to stand on the defensive when they face any public audience, that they are to defend their special province of work. The day will come and is coming rapidly in America when that shall cease. We shall all hail that day. I

believe that it has largely come already with the leading thinkers of the educational world, but it certainly has not come, if one regards the point of view of the public mind. I have been deeply impressed with this fact as I have recalled, sitting here this morning, an opportunity that was afforded me a few months since of discussing this question in the presence of a club of about one hundred and fifty gentlemen in one of our larger cities, who proposed for discussion among themselves the question, "Shall we give to our daughters the same education that we give to our sons?" I confess that I have not been at work long in this particular department of education. I had rather assumed that American society at large was prepared for the fullest education of young women that they were capable of taking. But I was surprised on that occasion to find that with the single exception of two gentlemen engaged in the work of educating women, not one man who spoke gave an opinion of unqualified adherence to the idea. There was not one who did not raise objection after objection and point out danger after danger.

Those dangers have been summarized in the paper presented to you this morning. My opinion on those points agrees with that of Dr. Seelye. It only shows clearly that, after all, the work of woman's education has yet to push its way in the public mind and in the public apprehension of what it means. I should prefer to discuss the dangers of woman's education as a single sphere of general educational work. I believe there are dangers in that direction,—in the multiplication of small and weak colleges,—in the change of our curricula from the old methods to the new. There

are dangers which confront us as we study the relation of the high school to the college and of the college to the true university. Our high schools are trenching upon what used to be thought the province of the college and our colleges are combining both the college and the university and the consequent chaos is a danger confronting the whole educational world of America.

But it is not my province to discuss these questions, nor the question of endowments which also comes to us freighted with the same danger which it bears to colleges for men,—a tendency to endow special lines of work which, after a few years, have often ceased to be desirable. There is the danger of applying endowments in certain directions where they are seen to be contrary to the spirit of the institution with which they are associated, a danger which was referred to in conversation last night by Dr. Fitch and which he has discussed in the light of a better experience than has come to us. I turn from these general subjects of education to these special subjects which have been referred to by Dr. Seelye, regarding one or two of which I wish to say a few words.

Regarding the physical dangers, the danger to woman's health, I made a statement somewhat similar to that which he has made, at the meeting to which I referred and was met with this reply, "there is nothing so unreliable as statistics." That is an unworthy reply. Is a judgment wholly unsupported by facts and without a figure behind it, of more account? Now Vassar college has been open 23 years and there has been the most careful study of this question in all

its history. A recent resident physician, now in active practice, a highly educated woman of thorough scientific training, has given very particular attention to the gathering of statistics and she says, that in Vassar the health of seniors is better than the health of freshmen and that the health of the college girl is better than the health of the girl out of college. She goes farther than that and states that in comparing the statistics of the college with which she was associated with the colleges for men whose records she could reach, the health of the average student was better in the woman's college. That bears on the subject. I do not say it is conclusive. I know statistics can be falsified. But I do say that it is better than a statement without a fact behind it. It points in some direction and that direction is toward this conclusion that education, carefully watched in its process and carefully considered in its plans, does improve the health of young women. But certainly no one can look over the graduates of these colleges for women and not be impressed with the fact, as far as it can be discovered in their bearing and health, that this educational process is better in its health-giving effect than we might have judged on an *a priori* basis.

Let me speak a word also concerning the social attractiveness of women. I shall speak briefly and I dislike to refer to it at all. I have wondered how it could be that any man could raise an objection of that sort, how any man could say that a woman who was agreeable to him could be any less agreeable because her mind was well trained. There seems to be a fear with a great many opponents of woman's edu-

cation that a college graduate will go about in society talking Greek. It is not true of any average graduate of men's colleges. But there seems to be a fear of this sort. Now I think that those of us who have noticed life and studied it carefully have been rather impressed with the fact that it is the girl or boy just beginning the study of Latin, for example, who is most likely to air his knowledge of it. It is the college freshman, the world over, and the college sophomore, who are more likely to air their knowledge in society than the college senior. And why should we expect our young women to be more likely to commit this egregious social error, with the far greater tact which women have than men? We can trust nature for that. In general the men who are the most learned are not always wishing to discuss the deep problems to which they give their vigorous and closest thought.

Dr. Seelye has referred to the subject of domesticity of women, and regarding it I wish also to add a word. There has been a discussion going on for years in the English magazines and reviews, and recently in American literature, regarding the small number of children in the average family, and the responsibilities of maternity. I once heard it said that our small families in fashionable society are due to the higher education of women. Was it because women were so well educated in the time of Augustus Cæsar that the Roman senate offered a reward for larger families? It does seem to me that that point ought to be touched upon for just this reason, that without a single perception of the relation of facts or social circumstances, men and women go abroad pro-

claiming that this is a fact. Yet every one knows, who thinks of social conditions, that if marriage is less frequent to-day than a generation ago, it is because as society grows more complicated and as luxury increases and as certain social influences grow among us,—and they have grown rapidly in the last twenty years,—it is true that marriage has decreased with them. Why should we expect to escape the great laws which have been universally observed in history?

I sometimes feel like asking these advocates of the narrower education of women if they think it is true that the higher education of women affects them so that they do not marry. I hear it said from time to time that the young men are marrying less than they did. I wonder if that can be due to the higher education of woman. Surely there are enough young women left. If men are looking for women who are not highly educated, there is no danger of a failure in the supply. You remember that Sydney Smith eighty years ago contemplated this very problem, and he asked that question which has been quoted so often in the general discussion of this matter, whether a woman would abandon marriage for mathematics or the classics, or would desert an infant for a quadratic equation.

The question simply comes to this: Does the kind of training which they give in colleges for men help to train and develop the soul of women, or does it not? That is still the question, it seems to me. Granted all that is charged, can it yet be true? Now there are generally similar systems of education in all our colleges for women and they are similar in their

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aims. Can it be true that thay generally fail to accomplish their end and aim? A liberal education, that is their end and aim. Is not education simply the means by which the soul and mind are rendered more efficient, by which men's powers are brought into his grasp, by which he arrives at a purer analysis and develops the power of clear thinking? I believe this to be true. It is true of both man and woman that education gives them clearer thought and more efficiency. All of this training,—and it has been argued to us from the utilitarian standpoint this morning,—contributes to the very highest use. It contributes to build up a more efficient man or woman. Other things being equal, the better business man is the better educated man. The better educated woman will take better care of her house.

Some facts were presented a while ago at a convention in Washington, regarding women in the granges of the country among the farmers. It was stated as a fact that from the class of farmers' wives there is a very large percentage, larger than from almost any other class, gathered into the asylums for the insane. The fact, it was claimed, is due to the narrow, pressing duties of life among so many of these farmers' homes, and the grange, it was said, is a discovery for the salvation of these women. They gather in their meetings week by week and discuss the problems of domestic economy. They also gather month by month and discuss the higher questions of political science and political economy. These granges are thus proving the salvation of the women. I give the facts for what they are worth. I have seen them stated from other sources and similar inferences have

been drawn from them. These women in their domestic economy are made more efficient than they would be without this relaxation and education. It bears up the soul in the hours of darkness, trouble and trial. Who of us in these dark parts of life does not again and again turn to these resources which we have gained in the process of education? When we see what an education means in the sphere of woman's life today, who does not see the absolute necessity for a higher education? Women are the life of missionary societies in connection with the churches.

The danger which threatens the home is one of the chief dangers of our social fabric. Who but women are working out this problem? Woman is certainly chief in this department of activity. In the higher education she is not simply trained to know more Latin or more Greek, not to work out the problem of quaternions, but to help any class of society in any sphere which is equal to her energy and ability. Every woman will settle the question of the use of her advantages. The only question is shall we give them opportunity for the larger development which is made possible by the higher education. Shall we give to woman this higher efficiency which will make her a blessing to her kind? [Applause.]

Extract from a letter by Rev. G. D. B. Pepper, D. D. LL.D., President of Colby University, to the President of the Institute.

We have examined and ascertained the relative standing of the young women and young men of the

classes containing both. The first class was that of 1875. Since that time there have been two classes containing only young men, (1876 and 1883), leaving twelve classes having both sexes in them. The whole number of young women who have graduated is twenty-seven.

It will be seen that only a very small proportion of our students have been young women. The highest number in one class has been five, (1888). The greatest number of young women at any one time connected with the college has been twenty-one. The relative rank of the two sexes in classes containing both is as 895 to 817,—the young women having the higher rank. This is due, in my judgment, to three causes:

1. The young women who come here are those who have a more earnest purpose to secure an education than the average college student, male or female. Only such are likely to come here while our number is so small.

2. The smallness of the number is a spur to study; since there is a natural consciousness of being more observed in respect to the quality of the work done in the class-room.

3. There is less to draw young women away from study, e. g. athletic contests, intercollegiate and other.

It was found that the average rank of the young women had been considerably higher in Physics, Natural Sciences, Metaphysics and Pure Mathematics than in other subjects,—highest in Physics and Natural Sciences, next in Metaphysics, and a little

lower in Pure Mathematics,—the greatest variation in them being about seven one-hundredths.

The Board of Trustees have been apparently unanimous and hearty in support of the admission of young women from the time of the adoption of the plan (1870 or 1871). Two years ago a house was purchased for the accommodation of the young women, near the campus, and placed under the care of a matron. No variation in the curriculum has been made for them. They pursue their course "on the same terms with the young men." There is not complete unanimity of judgment among the Faculty as to the wisdom of college co-education. The prevailing and growing sentiment, however, is in its favor. There is a like division of feeling among the young men connected with the college. All the young men, however, agree in showing to the young ladies uniform courtesy. This has seemed to develop a desirable refinement of manners and of spirit. There has been, from the beginning, no case of scandal or of any kind of trouble consequent upon the presence of young women in the college. The health of the latter has been fully as good as that of the young men.

While it is, doubtless, true that our daughters need a training different in certain lines from that of our young men, there seem to be no valid reasons why they should not take together such part of their education as is common, but many clear and strong reasons why they should do so.

The pertinacity of traditions in college life makes it hard to secure co-education in its best form and with its best results; but much has been done toward changing the traditions which are opposed to the

union. At the same time the claim sometimes put forth that the daughters have a right to admission to colleges founded for the sons has no more ground than would belong to the claim that the sons should be admitted to the colleges founded for the daughters; since until recently no provision for equal education was given to the daughters in separate institutions. Somewhere they ought to find the highest and best of which they are capable. As to this there is no shadow of question. It doubtless depends largely upon circumstances whether an institution should be founded or continued for one sex to the exclusion of the other; but the ideal arrangement seems to me to be union in studies common to both, and separation in studies special to each.

There is nothing in a genuine normal college life that demands any other or further separation than that which everywhere else is recognized as founded in nature. The influence of each sex upon the other is good and not evil.

Dr. J. G. Fitch, of London, gave some particulars respecting the growth of interest in the higher education of women during the last quarter of a century in England. It was remarkable that none of the ancient foundations, whether universities or endowed schools, had ever contemplated a liberal training for women. The whole of existing facilities at Cambridge and elsewhere were due to the awakened conscience and the higher sense of public duty on the part of men of the nineteenth century, and to the foresight of testators and founders. Legislation had enabled trustees to devote a part of educational en-

dowments to the advanced education of girls, and the Universities of Cambridge and London had admitted women to degrees and academic privileges on substantially the same conditions as men. It was remarkable that last year at Cambridge where successful candidates were classed in order of merit, the highest place in the Classical Tripos was secured by a young woman scarcely twenty-one years of age, who was not only a brilliant Greek scholar, but an excellent tennis player, one possessed of health and vigor and much personal charm. This movement for encouraging the higher education of women had been connected with other movements for enabling them to obtain admission to many honorable and lucrative professional employments heretofore closed to them, and also for utilizing the great services of women in important public trusts as guardians of the poor, as members of school boards, as teachers, and as administrators of public charities. He believed that all these movements had proved most beneficent. They had added largely to the intellectual and practical resources of the community, had given to women increased influence and opportunities of usefulness, and had added no less to their happiness and dignity. He was glad to know from the writer of the paper that in this important respect the experience of America amply confirmed the conclusions to which good men were being brought in the old country.

V.

EARLY INSPIRATIONS.

BY HEZEKIAH BUTTERWORTH, BOSTON.

"Endymion, one day thou shalt be blessed."

KEATS.

There is a poem by Keats, that is little read, that beautifully presents an allegory of life. It is founded upon the Greek myth of the fair faced shepherd lad Endymion, who used to sleep on Mount Latmos and who became loved of Diana. As the goddess passed over the mountain she kissed him in his dreams and inspired him, and the inspiration at last made him immortal.

The young genius of Keats in affluent imagery gives us the legend, not from the Greek point of view, but from that of the young shepherd.

Endymion one night beholds in his dreams a face of transcendent loveliness. Will that face ever appear again? The question haunts him in his pastoral pursuits; it makes him pale at the great Pan-festivals, and his life has become a quest for the unknown face that came to him in his sleep.

At length the same beautiful face appears to him again; this time it is reflected in a fountain. His

quest goes on when he hears his name called, and the voice vanishes. The vision becomes fixed in his soul. The gods love him because he has placed his affections upon an immortal, and a goddess is made to say:

"Endymion, one day shalt thou be blessed."

The face of his young dream, the reflection in the fountain, the mysterious voice, is at last revealed to him in the form of a divinity, and the inspiration that he has followed lifts his soul into the celestial abodes. He finds that the kiss that inspired him in his shepherd days fell from the lips of a goddess, and that he has been following an unknown inspiration. The gods astonished ask:—"Why came this mortal here?" And they all answered: "Because he placed his affections upon an immortal."

It is the old story, all life repeats it; the voice of God to Abraham, the night vision of Jacob, the burning bush in which the mysterious I AM THAT I AM was revealed to Moses. The last step in the mission of a great soul lies in the first inspiration, and every one has been kissed in his dreams by some Selene, and has felt the divine spark quickened within him. As England's lyric poet sings his experience:

"Thoughts of great deeds were mine, dear friend, when first
The clouds which warp the world from youth did pass.
I do remember well the hour that burst
My spirit's sleep; a fresh May morn it was
When I walked forth upon the glittering grass
And wept, I knew not why; until there rose
From the near schoolroom voices that alas!
Were but one echo from the world of woes—
The harsh and grating strife of tyrants and of foes.

And then I clasped my hands and looked around
But none was near to mock my streaming eyes
Which poured their warm drops on the sunny ground.
So without shame I spake—'I will be wise
And just and free and mild, if in me lies
Such power, for I grow weary to behold
The selfish and the strong still tyrannize
Without reproach or check.' I then controlled
My tears, my heart grew calm and I was meek and bold."

—*Revolt of Islam.*

INSPIRATION THE GIFT TO YOUTH.

Inspiration is some inborn faculty of clear sight, the consciousness of the soul's calling and mission, and is the revelation of Heaven to youth. The world itself received it in childhood, when poets and prophets, the creators of palaces and temples and blossoming marbles, beheld the chariot of a goddess in every drifting cloud. Every youth is conscious of special impulses to worthy action, as of the visit of an unknown power to him, in his receptive moments when the soul rises superior to itself. He begins to be haunted by ideals of a better life. The chariot of Selene passes over him, and the beautiful goddess prophesies,—

"Endymion, one day shalt thou be blessed."

The great benefactors of mankind have, like Endymion, been the followers of a face in the young dream of life.

"I will, I will be a hero," once exclaimed a boy, pacing the deck at night, and gazing out on the calm moonlit sea. The face of the future had come into his dream. It was a luminous hour. In it were born the victories of the Nile and Trafalgar. Amid the

shouts of victory that fell upon his dying ears, he beheld that face again.

"I will one day discover a means of performing a surgical operation without pain," thought the boy Morton. The thought grew. He followed it. One day a school of physicians in the Massachusetts General Hospital looked down on the table where lay a suffering woman, and beside her stood an inspired young man, whom they deemed a visionary. The young man touched her face with a sponge and her pain had vanished. She was in the land of dreams. The armies of France and Russia, and, at last those of our own country, had cause to recall the purpose and faith of that young man with gratitude. His monument stands on the Public Garden, Boston; and all receive a better impulse of life who pause under the cool trees to gaze upon it. The great discovery was the following of a face in a dream.

A young Genoese read Seneca. The words "Ultima Thule" arrested his thoughts and brought to him the vision of a face. They haunted him. He sat on the quays of Genoa at night and gazed on the stars, and dreamed that the earth itself was a star. He weighed the visible earth, as it were, in the scales of God, and found that an unseen part was wanting. He walked the seas by faith. Land birds came at last and sang to him. The face of his young dream is America. "God made me the messenger of the new heavens and the new earth," he said when his voyages were over, "and he told me where to find them. Charts and mathematical knowledge had nothing to do with the case." The star of his inspiration shone over all.

Petrarch stood by the tomb of Virgil, and there came to him the face of the dream. Bernard of Clairvaux was journeying alone, filled with religious doubt, and he turned into a wayside chapel to pray. The face in the dream appeared to him there, and he went out to adjust the tiaras of popes, and the crowns of kings.

Bach copying old music in a garret in his boyhood beheld a face; he followed it and the world sings his songs forever.

A poor boy walked the streets of New York, alone and friendless. "Oh, that I had the means of obtaining knowledge!" he said. Then he thought of others. "If I live and am prospered," he thought, "no young man in fifty years from now shall walk the streets as I do, and lack the opportunities of improvement." A face like that which inspired Endymion had come to him in his dream. The Cooper Institute was the reality. The shadow of the great building fell at last on that man's coffin, and three thousand roses from the hands of gratitude, upon the grave.

INSPIRATION FOLLOWED.

The men who have led and enlightened mankind have been those who have seen the value of their early inspirations and held them as crowns, and placed them above every other consideration in life. The great eras of history have been the creations of such inspired minds, and the great teachers of the world have been those who have taught the youth to follow their early inspirations.

The mind of youth, like the Shepherd on Mount Latmos, is a temple haunted by ideals of a noble life.

Coleridge says that "All men are Shakespeares in their dreams." Ideals, if followed, are new creations. They are life; every grand structure of art was once a dream. The Cathedral of Cologne is but crystalized thought. All achievement is but the following of a divine picture of the soul as we may believe all matter is but the thoughts of God in the past. The whole of life is spiritual, and as Alcott says, the soul contains the body, and not the body the soul.

The inspiration of youth, if fostered, becomes reality, and the decisive period of the soul is that of its early impulses. "What the child admired, the youth desired, and the man acquired," is the common history of all leaders of beneficence and progress.

THE TEACHER AS A GUIDE.

It is the sacred office of the teacher to guide inspiration, to foster it, and help make his every pupil to become his ideal self. No other calling has such opportunities, influence and responsibility. The true teaching of the school of life is: "Put your inspiration above every other consideration of life, and follow it—it is the only way of true success." As Schiller makes Columbus say:

"Trust in the God that made thee and follow the sea that is silent."

He is the best teacher who inspires others to follow their ideals and to crystalize their best lives; all other teaching is secondary. Said Prospero in "The Tempest"—"Here have I thy schoolmaster made thee more profit than other princes can?"

The teacher, to inspire others, must first feel the

inspiration of his own calling. His taper of life was given him to light a thousand lamps.

The inspired men of the world have usually come from inspired schools. The biographies of the past often begin: "He was a pupil of such or such a man," and the inspired teacher and the inspired scholar alike share the honor of the scholar's achievement. Think of Andover in her days of missionary inspiration; of the Harvard of that patriotic era that produced Sumner and Phillips, the Lowells and Holmes! Look at English Cambridge to-day, with her Delhi missions, her inland China mission, planted by her rich graduates, her ideal homes for the poor in the slums of London, supported by her inspired young men, and her multitude of charities to offer the friendly hand of help to mankind!

Early inspiration is tender; if nourished it will grow; if discouraged it may become perverted.—Sympathy builds men.

The highest inspiration is often found in what the world regards the most unfortunate young lives. Genius is often a compensation for defects or very hard circumstances: the exaltation of one faculty to the loss of another. "Dunce you are and dunce you will ever remain," was the decision of one of the teachers of Sir Walter Scott. The hand of love can alone lead the child of genius and special inspiration.

Herein lies the teacher's great opportunity. The teacher who truly studies life will never disbelieve the prophecy of any young inspiration, however unlikely it may seem. All history is but a book of the fulfillment of young inspirations.

Some fifty years ago there appeared in a rural

school in one of the districts of New York, a little girl of a slender constitution. Her parents were barely able to provide a sustenance, and she was sent to work in the factory. She speaks of her recollections of noise and filth, bleeding hands and sore feet, and a very sad heart. Inspirations came to her in dreams; she followed them. She aspired to be an author and a missionary, and to raise her parents to competence. A strange day-dream for a slender little factory girl. She found sympathetic teachers, and entered the academy. "On Monday morning," she says, "I used to arise at two o'clock and do the washing for the family and boarders. Before nine on Thursday evening I did the ironing; and Saturday, because there was but a half-day of school, we made baking day. I also took sewing of a mantua-maker close by, and so continued to make good the time consumed in school. My classmates had spent all their lives in school, and they now had plenty of leisure for study. They were, also, all but one, older than myself, and I therefore found it a difficult task to keep up with them without robbing my sleeping hours. I seldom got any rest till one or two o'clock, and then I read French and solved mathematical problems in my sleep." When about fifteen years of age she one day astonished her teacher by asking him if she knew enough to teach a school. "Yes, you know enough, but you are not big enough," was the answer. "Then I will stand as tall as possible when I go to see the trustee," was her answer. She did so and was successful. Years afterwards the visions of her young dream became realities.

"My life," she writes to an intimate friend, "has

been full of changes. Without one of my own kindred to assist me, I have struggled with almost every kind of difficulty up to the present moment. Even you cannot dream of half that I have borne. Heaven knows, enough to make me humble. Within the last year—one short year—I have gained for myself a position which others have been all their lives in attaining, and I have a right to be proud of it. You may tell me it is a small thing to be a magazine writer. So it is. But it is not a small thing for a woman, thrown upon her own resources, and standing entirely alone, to be able to command respect from everybody, rising by her own individual efforts above the accidents of fortune."

There was born in 1800 in a New England country town, a child whose father had just become a cripple and whose mother had become insane. "What a blessing it would be if that child were to die," so said the neighbors who assembled to assist the family; but the child did not die, and his mother, although she lived years, never recovered her lost mind. One day there came to him a face in the dream of life. He followed it. He thus tells the story: "I never met with any loss so great as that of the care of my mother during childhood in consequence of her having lost her reason. I recollect that when a very little child I was standing at the open window at the close of a summer day. The large, red sun was just sinking away behind the hills, the sky was gold and purple, the winds were sleeping, and a soft, solemn stillness seemed to hang over the earth. I was watching the sun through the trees, and felt a kind of awe come over me. Just then my mother came to me.

She was raving with frenzy. I pointed to the sun, and she became calm. She took my little hand in hers and told me that it was God who made the sun, moon and stars. "You are immortal," she said, "and shall live when the earth is gone. Pray to that great God, my child, and love Him and serve Him forever." She let go my hands, and madness returned. Tears filled my eyes, and my little bosom heaved with emotions I could not describe, but the impression never left me." That boy was sent to Yale College. When he entered he had but three cents in the world, and after his college examination he walked from New Haven to Guilford and slept a part of the cold night on the way under a cedar bush, yet when he died his influence had filled the world; he had fulfilled his mother's vision; the sad but inspired face of his dreams.

What teacher saw the inspiration that God had kindled in the soul of that American girl, or in that strange boy? Who would have prophesied that the secret ideals of these neglected minds would ever change into realities? Yet this girl and boy each was conscious that God had met them.

I spent some ten years of my life as a manuscript reader to a popular periodical. In these years there called upon me a great number of young people who asked me to read their manuscripts, and as I always heard them with sympathy, and many of them made me the confidant of their inspirations and hopes of life, I was often laughed at for the interest I took in young poets. But there is scarcely a boy or girl who then came to read to me their verses, that is not to-day in a position of commanding influence, and

who is not multiplying good thoughts in the world. I hope that I may live to write a book one day on young people who were laughed at; I have come to believe that such are geniuses all, and I would rather have the companionship of such young unappreciated inspiration than any other in the world.

THE DEVELOPMENT OF INSPIRATION.

Inspired men are the need of the nation, men who place their inspiration above every other consideration. And to develop such men society demands inspired teachers and schools. The voice of the school and college needs to be that not the pursuit of wealth, fame or any mere qualification, but to follow one's inspiration is the highest good and honor, and that to develop one's early inspiration the chief concern of life. Having learned what a pupil's inspiration is, it should be the care of the teacher to make that pupil's environment as much as possible in harmony with his purpose. No work of life can equal this. "Every man is a debtor to his profession," says Bacon. A man's ideal must be developed in the atmosphere of his divine calling. A course of conduct may not violate any general moral principle, but yet be a hindrance to his inspiration. Literature seeks solitude; it is right. Every artist has his picturesque seclusion. The great bards and prophets of old came down to the world from the mountain tops. We are told that few poems of Sappho remain, but they are roses. Sappho lived among roses. John the Baptist sought the wilderness, and Paul the desert of Arabia, to meet the world. "My library is my dukedom," said Shakespeare's studious hero. The English Lake Poets hid

themselves among the cool shades of Grassmere, and Windemere, and walked in solitary ways. A man's books, associates and associations should be in harmony with his inspirations. As lovable Robert Southey pictures his own life in his library:

"My days among the dead are past,
Around me I behold,
Where'er these casual eyes I cast,
The mighty minds of old.
My never-failing friends are they,
With whom I commune day by day.

With them I take delight in weal
And seek relief in woe,
And when I understand and feel
How much to them I owe,
My cheeks have often been bedewed
With tears of thoughtful gratitude.

My thoughts are with the dead; anon,
My place with them shall be,
And I with them shall travel on
To all eternity,
Yet leaving here a name of trust
That will not moulder in the dust."

The inspired utterances of America have come from men whose lives were in harmony with their inspiration. Jefferson lived like a democrat, and out of his youthful contributions to the Federalist grew the grand words of the immortal Declaration. Lincoln ever sought to be a man of the people for the people.

Longfellow guarded his inspiration like a vestal fire. Emerson left the most conspicuous pulpit in Boston when a young man, and retired to Concord woods that his life might be in harmony with his inspiration. Genius creates its own world. Spinosa

declined the most splendid offers of courts and universities, and lived in poverty to follow his inspiration. The Jewish church pronounced upon him the curse: "May his name be cast out under the whole heaven." But he followed the inner light, and it became a fixed star.

In the Art Museum, Boston, there hangs a picture of colossal figures representing Belshazzar's Feast. It is unfinished, but was held by the artist to be the master-piece of his inspiration. He spent upon it some of the best moments of forty years, and worked upon it the last week and last day of his life. The painter was Washington Allston, a man who followed life's best models from youth to age. Irving relates of him how the color would come into and go from his cheek, and his breath become short, as his soul would be brought into rapport with the master-pieces of the galleries of Rome. He was a man who kept the eye of his soul clear. His work lives, although his form was laid away one mid-summer's night in the old Cambridge cemetery, a half-century ago.

Washington Allston thus gave to a pupil, himself now old and famous, a secret of art. It was unlike other lessons that the young pupil had received, but the influence of it never left him, but became his secret of inspiration. The patriarchal painter said: "Young man, if you would succeed as an artist, you must keep yourself from whatever tends to injure your work, for Nature does not reveal her beauties to a clouded soul." Such must be the environment of all growing inspiration; such the inspired teaching.

THE NEW FIELD FOR INSPIRED WORK.

We are standing upon the threshold of a new era

in our national life; generation after generation of inspired men are gone, and there is a tendency in our life towards materialism. We are told the pulpit is losing power, that the political standard is becoming lower, and that the poetic voice is becoming low and silent. The readers of a "Paracelsus" and a "John Inglesant" are few, and of "He," "She" and "It" are many. Wealth is the quest of multitude, and when attained it is often used for mere selfish purposes. Even the schools teach the art of money-making as life's great end.

It is the highest mission of the school to produce inspired men, and the teacher may well enter upon this mission with hope. Never was there a nation that opened to its youth such a field for inspired work. "When American emigration shall reach the Pacific Coast," said an old writer, "her period of literature, art and glory will begin." The march of America has reached the Pacific. To-day we are sixty thousand. To-morrow we shall be an hundred thousand, and our art, our voice in music and song, and what we may hope will be greatest in our literature, is yet to come. We may reasonably expect that the poor passion for wealth and material display will pass, and that a period of splendid inspiration in intellectual and spiritual achievements is at hand.

The age of physical struggle has gone; the age of genius and spiritual things is coming. America is almost untouched by art and song. Her stories are yet to be written; her matchless scenery to be painted and her songs to be sung. The expression of our country in every form of art is yet to come. It is said that Switzerland has a thousand songs. Amer-

ica might have ten times as many, but she has not yet one great national song whose music is original. What subjects that await the artists! The dramatic story of Columbus is worthy of an epic or an oratorio. The Cabots, Vasco da Gama, Hudson, Ponce de Leon, Champlain, the grand pioneers of our States, the moral struggle, the emancipation, our rivers, lakes, and mountains, all are almost unsung. Gustavus Adolphus has a monument of song; Luther, Henry of Navarre, Wallace, and every grand European hero. Our Lincoln has none. Our holidays have never been sung by poets or composer. Our legends for the most part are without a ballad.

THE AMERICAN TEACHER'S OPPORTUNITY.

It is your mission to gather around you the children who feel their divine calling, and to teach them to follow their inspiration as life's highest good. It is yours to help to produce an era of inspired men, and to point the ways of inspiration to face-haunted feet. It is yours to teach that the pure in heart see God and the meaning of life; that those who are led by the Spirit are the sons of God. It is yours to help change into literature and song all past achievement, and make the solid marbles bloom. It is yours to be practical, to help form Village Improvement Societies, Young People's Historical Societies, Folk-Lore Societies, and to aid every work of endeavor that helps the spiritual life. To you are committed souls more valuable than a thousand planets; souls in whose dreams angel faces have shone. It is yours to help crystallize the ideal into solid life. It is yours to check a material age, and to teach the value of the soul.

I once sailed into the harbor of the Havana at early evening, under the Morro Castle, and gazed on the white city as it lay silent in the fading light. Afar was the Southern Cross in the dim sky. I recall well the scene. Jay Gould's yacht lay glimmering near the steamer, the band playing national airs. A steward pointed to the white arch of the city, and shouted:—"Colon! Colon!" I looked. The time-stained cathedral lifted its gray towers like two giant arms of faith in the rosy atmosphere, each arm holding a golden cross. "He means Columbus," said a passenger; "the dust of Colon is in that Church." As I gazed on the old towers in the spreading twilight, my thoughts went back to the marble statue in the Art Museum, Boston, of the first inspiration of Columbus in his boyhood, when he dreamed that the earth was a star. And in that young inspired face of marble, I fancied I saw the prophecy of the great future of inspired America.

Teachers of the American Institute, gathered here where Bishop Berkeley, to whom all life was spiritual, saw the Star in the West, and sung the destiny of the western world, the nation commits her young to you. Whenever you meet with a young life however humble, that has seen a divine face in its dreams, say to it: Place your inspiration above every other thought, follow it, and it will lead you to the gates of God.

"Endymion, one day shall thou be blessed."

"Here
Have I thy school master made thee more profit
Than other princes can?"

VI.

ILLUSTRATIVE BLACKBOARD DRAWING.

BY W. BERTHA HINTZ, OF THE NORMAL SCHOOL, BOSTON.

The exercise is to show the use of blackboard illustration in teaching Language, Reading and Number, in Moral Lessons, in Plant, Animal and Geography Lessons.

In the limited time only suggestions of lessons can be made, appropriate illustrations named, and a few examples sketched.

One important consideration is that the sketches accompanying a lesson do not take too much time and retard the lesson; to avoid this the least number of lines that will represent the object is chosen. This will explain why the sketches are rough and often incomplete, especially when the required idea has been reached.

The reason why illustrations should be used in lessons to young children is that pictures add to the interest of a lesson, and so help to hold the attention better and longer.

The following are examples:—

The *Language Lesson* may be about a picture in which the lambs are playing in the meadow, the old sheep are resting in the shadow, the sun shines on all; the wind begins to blow, the birds fly low, dark

clouds fill the sky, the leaves hurry by. The old sheep thinks it will soon rain, and cry: "Bah! bah!" (Little ones, let us go home again!) In the fold they safely rest.

The teacher makes the sketches, and teacher and children talk about them, with the thought above for the result. In the review, or reproduction by the children, it will be found that they are guided sufficiently by the picture, and will need little or no questioning by the teacher.

In a *Reading Lesson* from the blackboard the story is developed and incident after incident is sketched. The sketches are accompanied by the written story, which the children read as it is written, read again when completed, and write in part, or the whole, at the discretion of the teacher.

In teaching a lesson in a book, the different situations of interest are sketched, told about, and read. These sketches may be made at the time of the lesson or prepared before the lesson.

For *Number Lessons* the sketches should be of the simplest character. In illustrating the notions one, two, three, four, and five, objects may be rapidly drawn in outline. Rapidity is of great consequence, as sketching must never interfere with the amount of exercise the class is to receive. We may choose stars, crosses, flags, ships, anchors, hearts, bows and arrows, &c.

For teaching addition and multiplication the sketches must be placed in an orderly manner.

The same arrangement is best for teaching subtraction and division.

For these lessons parts of the sketches may be pre-

pared before, and the objects upon which the lesson depends added as the lesson requires them. Seeds may be planted and spring up, buds grow and change to blossoms, butterflies light upon them, &c. An orchard may be sketched with one apple tree prominent, the apples can be seen and counted. It is autumn, and they are taken down, are in the grass, where they can be seen and counted in groups of twos, threes, fours, &c; they are put in baskets, &c. Swallows alight on fences, or roofs, and their flight is watched, &c. A hundred devices will suggest themselves making blackboard drawing of use in number lessons.

In the little *Moral Lesson* the attention of the children can be better held, because they are helped by the blackboard sketches to picture conditions, scenes, and things more vividly, and when a conclusion is drawn, will feel it more keenly, and be more strongly impressed.

The lesson will teach that the proper exercise of any part is necessary to keep that part in order. The principal points are:—Two young squirrels, and the father and mother squirrel; the bringing up of the little ones to be strong, busy and good squirrels; the things they learn to do; the dispositions of the little squirrels; one of them getting tired of work and stopping to gnaw; the result; the squirrel's teeth described and necessity for gnawing told; the admonition of the parent; the promise of doing better in the future; the moral:—Gnaw your own nuts.

The *Animal Lesson* may be the structure of the characteristic parts, of two typical birds as adapted to their mode of life, and would include the observa-

tion of the stuffed skins of the birds, as wholes, the observation and description of the parts, the uses of the parts, the comparison of the like parts of the two birds, noting that the structure of each is particularly fitted for the needs of each bird.

During the lesson the features that cannot be observed from the mounted specimen are sketched by the teacher, and clearer notions of form in different positions, of size, of action, and of habits of each bird may be formed. If the lesson be on the eagle and pelican, the sketches should be the size of each of the birds, from tip to tip of their large wings; the length of the birds; the heads (beak and eyes;) the feet of the eagle, free-toed with talons; those of the pelican, webbed; the eagle among wild mountains; the pelican on the seashore.

Blackboard sketches are particularly useful in general animal lessons, in which more animals would be needed than could be brought into the school-room, as in explaining that homologous parts of animals are fitted for different modes of locomotion, illustrated by sketches of reptiles, fishes, birds, and mammals; in classifying animals; in representing internal organs, and parts too small to be easily observed by the class; in explaining development, metamorphosis, and the growth of any one part, (as of a feather) &c.

In the Plant Lessons the drawings of parts observed should be made by the children with direction by the teacher.

There are but few lessons on plants that are not aided when accompanied by sketches; those, however, in which the sketches are absolutely necessary, are the general reviews of courses, of lessons, in

which they take the place of the specimens. Such are: Lessons on trees, buds, leaves, flowers, fruits, and roots. These sketches should always be made accurately.

Geography Lessons always require illustrations. These should be diagramatic and pictorial. Both kinds should be used for illustrating natural features of land and water. The pictorial are best for physical phenomena. Illustrations of mountains, volcanoes, capes, isthmus, peninsula, island, river, bay, geyser, waterspout, &c., will show that the imagination will picture better with the help of the sketches.

Other subjects taught in schools may be accompanied by blackboard sketching, as Geology, Physiology, History, &c., &c.

The teacher preparing herself to sketch on the blackboard should first learn what can be done with the crayon, practice different strokes for rapid execution in different directions, apply them for the purposes they will best serve, and get all the mechanical facility. In addition to this it will be found necessary to form the habit of recalling forms once seen accurately and entirely. The mind must always distinctly hold the representation before the attempt to sketch is made. The beginning will be difficult, but the determination to succeed, with the proper amount of perseverance in practicing will soon carry one to the stage where much enjoyment may be derived from sketching on the blackboard.

VII.

RECENT ADVANCES IN ELECTRICAL SCIENCE.

BY A. E. DOLBEAR, PH. D., PROF. IN TUFTS COLLEGE.

In his book called *First Principles*, Mr. Spencer has a chapter on Rythm, in which he points out with abundant illustrations the fact that all the processes of nature go on in a rythmical manner. Periodicity is the rule, and constancy of direction, of condition, or of progress is nowhere to be seen. The social system exhibits it as well as the solar system, and civilization has its epochs as well as geology. Science, Literature, and the Arts have their ups and downs as have stocks in Wall street, though happily not with periods so short, though there are both bulls and bears in each.

In his Fourth of July oration in 1876, the Honorable R. C. Winthrop said that the present century was too late to be marked as an epoch in Science, seeming to imply that former centuries had a higher rank for scientific progress than the present one. Seeing that more has been done in all sciences during the present century than in all centuries preceding it when added together, his statement must be incorrect. There never was a time when so much was done in every department of mental activity. Every science from Astronomy to Zoology has been

created anew. Even Mathematics has not escaped, for the proposition that Euclidian geometry is only an experimental science and may not be abstractly true, that space may be curved, and the doctrine of fourth dimentional space have given much uneasiness to some thoughtful philosophical minds. But the moods of mind change with the contents of mind, and happy is he whose rythmical moods do not frequently take him from paradise to purgatory.

Electrical phenomena must have been in existence from the beginning of things. The Mediterranean Sea rolled up its amber pebbles upon its shores, and Thales noted its attractive property when rubbed. With that observation the knowledge of electricity stood still for more than two thousand years. Gilbert, Sir Isaac Newton, and a few others studied this property of attraction due to friction, but nothing of importance came of it.

Franklin's discovery of the identity of lightning and electricity created such a wide-spread interest that for twenty years that phase of the subject was studied, and the changes were rung on what we call statical electricity. Franklin's time was one of the epochs in the history of the science of electricity.

Until the observation of Galvani of the physiological effect of electricity upon a frog's leg in 1780, no one seems to have alluded to the physiological action, although it was well known. Franklin once knocked down with a discharge from a leyden jar a whole row of skeptical young men who didn't believe that a spark could produce such an effect. Galvani's experiment served the good purpose of adding stimu lus to fresh experimenting, and in perpetuating his

name in the annals. In 1799, Volta discovered that electricity could be generated by chemical means, and devised what is called the Voltaic Cell that developed new and startling effects of an entirely new order. It was with a battery of Voltaic cells that Sir Humphrey Davy made some of his most famous chemical discoveries and produced for the first time what to-day we call the arc-light. After this came Oersted, with his discovery of the action of a current of electricity upon a magnetic needle; Ampere who reduced this action to a theory; Henry who taught us to make electro-magnets adapted to the work to be done; Faraday who discovered magneto-electricity, the relation of an electric current to chemical action, and the effect of magnetism upon a beam of light; Daniell and Grove and Bunsen who vastly improved the galvanic battery; Ohm who pointed out those most important relations known as Ohm's law; Joule who worked out the mechanical relations that exist between electricity, magnetism, heat and work, and a large body of others scarcely less notable who contributed to the science theoretically or practically. To merely chronicle the efforts and discoveries of these men would require many volumes, yet if others had not labored not less successfully than their predecessors the electrical epoch in which we live would not be begun.

For more than a hundred years great things have been expected of electricity, and all the prophets have felt their reputations to be very safe in predicting almost anything as being possible to it. Some have gone so far as to declare that electricity is the force that runs the universe, that maintains life, yea, is life.

It has been known for fifty years that electricity could turn a wheel and make a magnet, decompose chemical compounds, deposit metals, make heat and light, and all the laws that are involved in all of these have long been known to the whole world.

Whatever may be the reason, it is true that there has been within the few years a series of electrical surprises that has been nearly as great to those well acquainted with the previous state of knowledge as to those quite unacquainted with it. A century plant may be watched day after day and year after year and show no external signs of growth or change, but when the time comes it buds and blossoms at a rate wholly incomparable with its previous apparently stable condition. All that time, however, there must have been going on molecular changes necessary for such sudden exhibition of life and energy. In like manner the long, quiet existence of the electrical plant has changed to rapid growth and budding and blossoming in all sorts of industries.

Those who worked with galvanic batteries early had great hopes of making them do work of all kinds, and there seems to have been a very general impression that if electricity could once be generated there was nothing too hard for it to do. Only apparatus adapted to it needed to be provided for utilizing it: and there is still lingering in the minds of some not very well informed persons that mechanical effects far surpassing any that have hitherto been reached may be expected. Attempts were made to drive machinery by battery power fifty years ago. It could be done in a small way, but was found to be so expensive as well as troublesome as to make its use

practically prohibitive. The battery was bulky, dirty, inefficient for anything but the lightest work, and required the constant service of an expert to get anything from it. Aside from this there was an exaggerated idea of the work that was possible, and of what was actually got from the ones they had. For instance, in 1854 I saw in Worcester a galvanic battery of fifty cells from which it was said ten horse power could be obtained with a motor. As the cells were only two quart cells we now know that not half of that could be obtained and probably not so much as one horse power was actually obtained. The difficulty that all labored with twenty-five years ago was that no one knew exactly what he was getting, there were no definite electrical measures, so that experimenters groped blindly.

ELECTRICAL MEASURES.

The necessity for knowing electrical values and relations became so great that the British Association appointed a committee of some of its ablest men to investigate and report upon some available system of electrical measurements. In 1864 they made their first report recommending a system of units related to the metric system of weights and measures, and known as the C. G. S. units, centimetre, gram, second. Since then names have been adopted for these and we have the Volt, the Ohm, the Ampere, the Caulomb, the Watt and others which are more or less familiar to all. These are as precise and definite and applicable as are inches or feet for measuring length, pounds for weight and quarts for volume. As soon as standards of these units and suitable measuring

instruments could be made and distributed the electrical knowledge of the world began to be definite. Ohm's law had a signification that it could not have before and experiment could be carried on in a more intelligent way. I trace the rapid growth of late years to this as a beginning. Certainly now no one talks about electrical matters in any other language than in the terminology thus introduced.

THE TELEGRAPH.

In 1829 Prof. Henry fixed a mile of wire around the walls of his lecture room and made an electric current to work an electro magnet so that its armature struck a bell as often as the current was permitted to magnetize the iron. He had a battery, a key, a line, an electro-magnet with movable armature and a bell to produce the sound. This is the substance of what is called to-day the Morse telegraph. There are the best of reasons for believing that Morse did not contribute a thing to the telegraph except energy and enthusiasm to accomplish the result, but once fairly tried between Washington and Baltimore in 1844 it grew as a business at a wonderful rate. Business began to be dependent upon it and the wires were crowded with work. Presently after the first surprise at the accomplishment of transmitting intelligence upon a wire, men began to wonder if it were not possible to transmit messages both ways at the same time upon one wire. Various plans were devised for doing this, one of them as long ago as 1853, but difficulties appeared in practice that could not have been foreseen and no one was successful until Stearns, of Boston, in 1872, introduced the device called a con-

denser, that instantly made it possible to telegraph both ways at the same time and doubled the commercial value of every telegraph line.

It is reported that President Orton of the Western Union Telegraph Company declared that Stearns' duplex method was worth a million dollars to that company during the Chicago fire. The apparatus was applied to the Atlantic cables and doubled their efficiency and materially reduced the cost of messages everywhere. Improvements of that kind did not stop there, but Gray, of Chicago, Edison, Smith and others have devised ways of sending two or more messages at the same time each way. This is known as the quadruplex telegraph. Delaney has also invented an entirely different system by which a dozen telegrams from as many different places may be sent on one wire without interfering with each other and each operator ignorant of all but his own work.

There have been many minor improvements of great utility and displaying great ingenuity that deserve mention, such as the Gold and Stock Printer that records all over the country in English text the varying prices each day in Wall street. The facsimile telegraph that writes or draws a picture and duplicates any kind of marks that are made at the transmitting station, and by apparatus that is really simple. Mechanical transmitters that enable one to transmit hundreds of words in a minute and record them at the receiving station. In spite of all the facilities for telegraphic work the business is on the increase and it seems as if every message begat the necessity of sending two more.

THE DYNAMO.

Immediately after the announcement of Faraday's discovery of magnetic electricity, that is, the production of electricity through the agency of magnetism, machines were made as substitutes for batteries. Some of them were made ambitiously large with the expectation that their productiveness would be proportional to their size This proved to be a mistaken hope. For twenty years there was no improvement whatever in the apparatus. In 1857 Siemans introduced a new form of armature into the magneto-electric machine, and this is still known as the Siemans' armature. It allowed the bringing of the opposite poles of the magnet close together and thus gained a great increase in the strength of the magnetic field in which the armature had to rotate.

In 1866, Wilde, of England, made the Siemans' armature to rotate between the poles of an electro magnet which was kept magnetized by a current from another source, and this increased the effect considerably. Afterwards the permanent magnets were entirely dispensed with by so winding the electro-magnet that the current from the armature went through the coils of the large magnets, greatly strengthening the magnetism which in turn gave a stronger current, and so on till a maximum had been reached that depended upon the amount of wire in the circuit and the power applied to the machine. All the machines made up to 1867 gave a rapid succession of currents in opposite directions instead of a continuous current in one direction, as is given by a battery. Such alternating currents are well enough

adapted for some kinds of work, but are not adapted to do other kinds, such as telegraphing.

In 1871 Gramme produced a machine that gave in the course of one revolution a succession of currents all in the same direction, and so rapid that practically it was a continuous current. The chief feature of this machine consisted in its armature, which was made in the form of a ring, an entire departure from the other well known forms, although it is now known that an Italian named Paccinotti had made a similar one six or eight years before, but there is conclusive evidence that Gramme had no knowledge of Paccinotti's work. This Gramme ring is rightly deemed to be an invention of first rank in importance, and when the current from the armature is made to pass through the coils of its own magnet the whole machine now called a *dynamo* has proved to be a nearly perfect machine. By a perfect machine is meant one that will yield 100 per cent. of the energy that is spent upon it. A steam engine at best gives but 50 or 60 per cent. of the energy of the theoretically perfect engine. The turbine water wheel has long been more efficient than any other motor, yielding 80 per cent., and sometimes a little more of the energy spent upon it, but a good dynamo to-day yields as high as 96 per cent. from which it follows that considered as a machine for transforming energy it is but little short of perfection. So perfect is it that it cannot be improved so much as four per cent. This is an important fact in other ways than the simple economical one stated. There are numbers of persons still endeavoring to improve the dynamo so that it shall yield appreciably more than it does. I know of one

who thinks he can get three or four times as much from a dynamo he has wasted thousands of dollars upon and is not yet satisfied with, as is given by any other in the market. Far be it from me to attempt to discourage any man from trying to improve anything. A few years ago an eminent electrician said to me, "I am never going to say again that anything is impossible." Some of the greatest achievements have come from men who started with what seemed to be utopian aims. If they did not accomplish the thing they started to do, they stumbled upon something else as important as that, which they would have missed but for the incentive of the original effort. Columbus got his outfit and sailed west for the East Indies, but discovered the West Indies. Yet if there is one thing that a man may be so sure of as to justify him in a degree of dogmatism, it is that no one can get more energy out of a machine than he puts into it, and when we have, as we do now have, the means of knowing with great accuracy both what goes in and what comes out of a machine, and when the latter is 96 per cent. of the former in a dynamo, there is left no appreciable margin for the present or the coming man. It is true that an enthusiastic man can get all the money he wants for the purpose of getting more energy out of a machine than is put into it. Keely exemplifies this as did Dr. Gary, of Boston.

Now the cost of the production of electricity is reduced to that of the cost of running a steam engine. A good steam engine may give a horse power for an hour by consuming two pounds of coal and ten cents worth will maintain it for twenty-four hours. It might

fairly be supposed that with the cost reduced to such figures that the applications of electricity would multiply at a rapid rate and new industries would be created.

THE ELECTRIC LIGHT.

1st. *The Arc Light.*—As has been said, the electric arc was discovered by Davy in 1808. From that time on it was experimented with and lectured upon all over the civilized world. Lamps were invented for it, here and there a lighthouse had been lit with it for twenty years or more, and an ocean steamer occasionally came into port with its beams streaming from its prow, yet practically there was no growth. No more than two arcs could be produced at the same time, and there seemed to be a growing conviction among electricians that in the nature of things nothing much better was to be looked for. It is true that until 1871 there was no good dynamo, but after that no one seems to have done anything with it until in 1878 when Mr. Brush, of Cleveland, attacked the problem and solved it, in a simple enough way to be sure, so that it is a matter of surprise that those who had before worked with the dynamo had not stumbled upon the method of distributing the electric light. It consisted chiefly in the consideration of what was apparent enough, that if one arc required fifty volts, two arcs would need one hundred, and ten arcs five hundred and so on, so if ten arcs were wanted the dynamo must furnish five hundred volts to the circuit. As simple as the multiplication table, yet it waited for the man who had the genius to *see* the simple thing to do it. At the very beginning

Mr. Brush was able to produce sixty arc lights in one circuit and could easily have had more but for the danger that comes with so high an electro motive force. At once electric arc lighting became an industry, speculative at the outset largely because of its novelty, and much money was foolishly spent in booming companies, but it had come to stay. It should not be considered that the sudden development of arc lighting was due to some particular invention. It was not so, but was due to the perception by Mr. Brush of the conditions to be met, and adapting his dynamo to them. The inventions were in substance all made so that no fundamental patents could be obtained either here or abroad, and others went quickly into the field that Mr. Brush had found, and helped him occupy it. He profited by being the first to provide such lights, but could hold no monopoly. Of course there were inventions and inventions, lamps, fixtures, regulators, switches and so on, but these were all secondary or tertiary in importance, and now the rays of the arc lamps interlace over the whole country, and the man in the moon might locate the towns of Europe and America by the light of these lamps at night.

Forty years ago this town of Newport was lighted by whale oil lamps, but now the dynamo has displaced the whale, and coal is substituted for herring and medusæ the food of the whale.

2d. *The Incandescent or Glow Light.*—That an electric current could heat a conductor to a red heat and even fuse it was an old fact. That a strip of carbon used as an electric conductor in a vacuum would give light and not be consumed, has been known for

a generation, yet ten years ago there was no such thing as a glow lamp, and no one knew how to make one or to light it economically if he had had one. Electricians, at that time, were of the opinion that the economical distribution of currents for small lights, was practically unattainable, and when Mr. Edison, in the fall of 1878, announced his intention of lighting up the lower part of the city of New York by electricity from a central station, two notable results followed at once; one the incredulity of nearly all those whose familiarity with the phenomena of electricity might be supposed to entitle their concurring judgment to very great weight, and the other, the fright that seized upon gas companies at the mere announcement, before anything had been done. Mr. Edison's successes in other fields had already made him famous, and capital, always timid, took his proposal as good as an accomplishment. You can all remember the depreciation of gas stocks eight or nine years ago. After this interval, and with the evidences about us so plentiful, we can the better sympathize with the threatened industry.

So entirely novel was the undertaking that neither books nor the experience of men could help. A lamp must be invented, the proper material for the conductor must be discovered, mineralogists ransacked the mountains to discover more plentiful supplies of some of the rarer metals or new ones. All sorts of material that could afford a suitable fibre had to be carbonized in a proper way to discover the best material and the proper treatment, the thickness and length needed to give the candle power wanted, the durability with currents of different strengths, and

so on, a thousand things needed to be done for the first time. Then there was no dynamo suitable for such work and never had been. It had to be built up *de novo* at great expense, demanding great fertility of invention, and what is still rarer, that mechaical instinct that can put things together right at first and give the reason for it afterwards.

With the glow lamp now lighting cities and towns, factories and machine shops, hotels and steamships, and these maintained at such an economical rate as actually to compete with gas, and in some places with kerosene oil, one hardly needs to say that Mr. Edison has been successful. It was not to be expected that such a valuable franchise as this should go unchallenged, and it did not. Abroad the courts have so far sustained Mr. Edison's claims, but here the fundamental lamp patent has been declared void. Not from proof of other's priority but from a purely technical and unworthy reason, namely, that the patent in Austria had lapsed through the lack of skill in some attorney. This is not the place to read a homily, but I cannot forbear to make the remark that those who believe in the wisdom of patent laws, and who would themselves hold patents and claim protection on equitable grounds, cannot consistently make a plea against another's patent, such that the mere statement carries with it its own condemnation in equity. In a law court technicality always has the precedence and equity must lose. In this case it was like a stroke below the belt, a breach of code not allowed by prize fighters.

To Mr. Brush and Mr. Edison is due the development of these methods of electric lighting, two great

industries that not only give us their products, light, in abundance and without the serious inconveniences of other methods, but have opened new avenues to capital and labor. Hundreds of millions of dollars are profitably invested, and tens of thousands of men have been taken from other overstocked occupations to an industry that had no existence ten years ago.

GAULARD AND GIBBS ELECTRIC-LIGHTING SYSTEM.

To keep the ordinary glow lamp properly lighted a dynamo is required that keeps the electro-motive force of the circuit constant in value. It may be 50 volts, or 100, or some other relatively low value, and the current varies with the number of lamps that are lighted. When many lamps are to be lighted at some distance from the station, very large conductors need to be employed, and the cost of these becomes so formidable that it is practically unprofitable to carry on such business at a greater distance than about 2000 feet from the station. In 1884, two electrical cranks named Gaulard and Gibbs, in Europe, proposed to send an alternating current of electricity through the fine wire of an induction coil and have lamps inserted in the circuit with the coarse or so-called primary wire, expecting that the high electro-motive force in the fine wire would be transformed into a lower electro-motive force in the coarse wire, and as electric energy with high electro-motive force can be transmitted on a much smaller wire then the same quantity of energy having low electro-motive force, they proposed to make practicable, electric lighting to a much greater distance than was possible by the method in use. Their proposal met with

more ridicule and abuse than did Edison's original one in 1878. All or nearly all of the electrical brains of Europe condemned the idea and the two men had to work against great odds and with no encouraging words. It so happened that they had more faith in their work than they had in the opinions of their critics. It is true, that along with the proposals named, they made others that were really extravagant but the critics made no distinctions and condemned the whole alike, yet to-day their plan, with some modifications has been developed into a competitor that seriously threatens to engross nearly the whole of the incandescent electric light business. Instead of being limited to two thousand feet this has already been worked eight or ten miles away, and a common telegraph wire is sufficient, instead of the huge copper rods needed for the conductors in the other method. The induction coil as used here is called a *transformer*, and is found to be highly efficient, some reckoning it as high as 97 pr. ct. I spoke of these two men as cranks, because they persisted in attempting to do what those who knew vastly more about the subject than they did, told them with nearly unanimous voice was impossible. It is really singular how those who know most about a subject fail to add much that is important to it. If Gaulard and Gibbs and Mr. Edison had paid any attention to their critics they would have done nothing. Prof. Tyndall has pointed out that an extensive knowledge of what others have done is more of an hindrance than a help to an investigator. The story of Gaulard and Gibbs is another warning added to the number already too large against condemning an untried experiment.

THE ELECTRIC MOTOR.

Electricity was employed to drive machinery very soon after Henry described the electro magnet, but batteries had to be used for the supply of electricity and these were not only too costly but were incapable of giving strong enough currents for much work. If time permitted it would be interesting to speak of the various attempts made since 1834 to thus utilize electrical energy. In 1855, I worked upon a battery motor in Worcester which the maker expected to yield ten-horse power. I, myself, endeavored that same year to make one magneto electric machine drive another, not understanding that, as then constructed, such machines gave alternating currents which are not adapted to such motors. I should not have thought this worthy of remark if Maxwell had not said that his greatest electrical surprise was that one Gramme machine should drive another. Now that the dynamo has been perfected the motor has been vastly improved and adapted to a great variety of uses such as running sewing machines, lathes, printing presses, elevators, ventilators and street cars, and so forth, and in my opinion is destined in the near future to supplant small steam engines in most thickly settled places.

THE WELDING PROCESS.

The heating power of a strong current has recently been utilized for the purpose of welding metals, by Mr. Elihu Thompson, of Lynn. He provides an induction coil, having some thousands of turns in its primary and only one in its secondary. An alternat-

ing current is sent through the primary coil, having a high electro-motive force and this is transformed into a current of great strength in the secondary, and this current is made to pass through the junction of the metals to be welded, raising the junction to a red heat, softening them, when they are pressed together and allowed to cool. They are then found to be thoroughly welded. Bars of iron, two inches in diameter, may be thus firmly joined in less than a minute. Cast iron, steel, copper, indeed all metals may thus be treated successfully. This process of welding by electricity is so simple, so easy to do, so cheap, and is applicable to so many purposes, that its importance cannot easily be over estimated.

THE SPEAKING TELEPHONE.

It is now twelve years since the announcement came from the centennial exhibition in Philadelphia, that Prof. Bell had succeeded in electrically transmitting speech and not quite eleven years since the telephone began to be commercially used. The centennial telephone consisted of an electro-magnet with its armature so mounted as to permit one to speak or to listen to it. Bell proposed to speak to the armature of an electro-magnet and have another person to hear what was said by listening to the armature of another magnet in the same circuit. This was a new experiment with old apparatus, and to Prof. Bell is due whatever merit belongs to it. It was the opinion of those electricians who were cognizant of Prof. Bell's work that though the electrical effects he looked for would follow, yet the sonorous effects would be too weak for the audible transmission of speech. In

this they were mistaken as experience proved, but it was too weak for commercial use and but for subsequent changes in both method and apparatus it would have remained a curious toy as the phonograph has been for ten years. Words could be transmitted, but "not with distinctness sufficient for every one," yet it was rightly considered to be a great achievement not so much on account of what it would do as for the manner of doing it. In 1861 Phillip Reis of Germany undertook the same problem of electrically transmitting speech, but in an entirely different manner. He made the sound vibrations move the electrodes of an electric circuit and vary the resistance, instead of making them vibrate the armature of a magnet. And he employed an electro-magnet for a receiver as Bell did 15 years after. Much stronger effects could be got with Reis' device than with Bell's. The record says that sounds of all kinds could be transmitted, that "words even were transmitted but not with distinctness sufficient for every one," which was the case with the centennial telephone. After the '76 exhibition the electro-magnetic telephone was abandoned. The permanent magnet telephone—an invention of mine, was substituted for it and is still in use to-day. Instead of using the receiver for a transmitter, Reis' transmitter was adopted and a knob of carbon took the place of the platinum such as Reis used, so that in the telephone of to-day the *method* of Reis is used in conjunction with my permanent magnet receiver. Prof. Bell's work was of great importance, as it led to the devising of suitable apparatus for doing what his would not do.

In 1879 I invented another method and apparatus

different from Reis' or Bell's and expected that such departure from anything that was shown or known in 1876 could be used without obligations to that patent. The Supreme Court to which the case was appealed decided that Bell discovered a new art and was the first inventor of a speaking telephone. Now a large body of competent men who are acquainted with both the history and the apparatus of Reis, declare that he did invent a speaking telephone. There are also a number of witnesses to Reis' experiments, among them Prof. Quincke of Heidelburg, who declare that they heard it transmit speech in Reis' hands. And as the German government pays a pension to Mrs. Reis because her husband invented the speaking telephone, it is permissible to hold that the court was mistaken in its historical judgment, and if it was mistaken justice has miscarried.

TROWBRIDGE'S DISCOVERY.

Between Boston and the Cambridge Observatory is a telegraph line for the time service of Boston and every second a pendulum completes an electric circuit and the signal is transmitted. This circuit is completed through the earth so that every time the circuit is closed a sheet current of electricity spreads out from the observatory toward Boston, and Prof. Trowbridge found that if a wire only fifty feet long having a common telephone inserted in it, had its ends thrust into the ground in the direction of this current, that the signals could be heard in the telephone a mile off at right angles to the line wire to Boston, and he therefore pointed out the practicability of telegraphing across a river or other space in a

similar way without a connecting wire between the two places. In 1882 I showed how communication was possible between shore and vessels at sea in the line of any cable, by having the ship trail a short cable parallel with another and use a Morse code of signals. This effect depending upon induction. A similar method but differing in detail is now used in telegraphing to and from railway trains in motion. A wire is stretched between the rails between stations and a car has underneath it in proximity to the other wire, a coil having a telephone in its circuit. The inductive effect of currents in the wire will cause simllar ones in the coil which will be heard in the telephone and thus signals may be sent. It is indifferent where the car with the coil is or whether it is at rest or in motion.

The sudden development of so many great electrical industries is due to the way in which we in this country do business, because in other countries they have not grown at so rapid a rate. Competition has made necessary here what otherwise would be only a luxury. If a merchant lights up the goods in his windows with an arc lamp and the eyes that have been dazzled by the brightness of the light at that window now look at the goods in a window lighted only by gas jets, they will look off color and of meaner quality. The second must have an arc because the first has one. If a physician has a telephone and can be summoned almost instantly he will get the business rather than his neighbor, equally skilled, but who has to be sent for by special messenger with loss of time and sometimes at great inconvenience. We can never have too many good things. Civilization is a condi-

tion in which the luxury of to-day becomes the necessity for to-morrow and our happiness depends upon our ability to supply our wants.

See then what a versatile and convenient agent electricity is, and to what a variety of uses it may be adapted in our houses to-day:

1. It can give us abundant light, displacing gas and coal oil.

2. It can give us heat for cooking, displacing the stove.

3. It can give us cold, cooling our drinks and freezing our ice cream, displacing ice.

4. It can run our sewing machines, blow our organs and turn our ventilating fans.

5. It enables us to converse with any one within a radius of five hundred miles of us and to telegraph to Buenos Ayres or Bombay.

6. Through its attractive property it can keep dust and disease germs from our rooms, and these it can destroy by disintegration.

All these possibilities come in a wire and for the one effect or another one needs but turn a switch.

So in the measure of our control over it does electricity bring to us leisure, light and life.

These material benefits that flow from the utilization of electricity to supply our wants and that mark an epoch in our history, are not the only benefits we have received. The work of the world must be done and the more of it we can make the inorganic energies do for us to supply our pressing need, the more leisure we shall have to devote to higher social and intellectual interests. In his essay on "The Praise of Knowledge," Bacon asks "Is there any such hap-

piness as for a man's mind to be raised above the confusion of things where he may have the prospect of the order of nature?" "Shall we not as well discern the riches of nature's warehouse as the benefit of her shop?" "Shall we not thereby be able to produce worthy effects and to endow the life of man with infinite commodities?" He then declares that "All the disputation of the learned never brought to light one effect of nature before unknown," and that "Knowledge itself is more beautiful than any apparel of words that can be put upon it," and that "The sovereignty of man lieth hid in Knowledge." These good things have come to us as the fruit of knowledge and in turn they have been the seed of knowledge. Others of the so-called forces of nature are limited as to the phenomena which they can produce. Gravitation can only pull. Chemism arranges molecules. Heat tends to separate molecules and so may be made to do work, but electricity is nature's jack-of-all-trades. It not only does errands but can attract and repel, make heat and light and magnets. Can cause molecules to combine and can separate them, it can write and talk and paint, sharpen a needle, and turn a crank, roar like a volcano, and both cure and kill you. Of course an agency having such various functions excites our curiosity and challenges our intelligence for an explanation. Who has not asked the question, "What is electricity?" To-day we are better able to answer this question than any one forty years ago was able to answer the similar one, "What is heat?"

Through the labors of Faraday, Mayer, Joule, Helmholtz and some others we have come into pos-

session of a body of generalizations, the evidence for which though not demonstrable is overwhelming because it is cumulative. This is what is known as the *Conservation of Energy*. Briefly this may be stated to be, first, that *physical energy is a product* of two factors, matter and motion, and, second, that the energy of the universe is a constant quantity. The latter proposition comes from our chemical experience that whatever changes a mass of matter may undergo it is never annihilated and never increased in quantity and therefore all the various phenomena exhibited by matter are due to the various kinds of molecular motion which it may have. Even the so-called properties of matter are explainable as due to it. There have been theories in the past that electricity is a fluid, or two fluids supposed to be imponderable, but nowadays no one thinks that it is a fluid in any sense. Consider the conditions under which electricity in any or all of the ways in which it may be made to appear. In a battery it is proportional to the chemical reactions, that is the molecular changes. As the matter is not changed in quantity, it follows that the changes must be changes of motion. In a thermopile, the motion provided is that vibratory kind called heat. In a common electrical machine, so long as the crank is turned the electricity is generated at the expense of the motion, not of the material of the machine. In like manner in a dynamo and in every other case. As Rowland has said, "It begins in matter and ends in matter and must be a property of matter." But electricity never appears except when motion of some sort is spent upon two different kinds of matter, or upon matter in two different physical

states. In the battery there must be two elements, in the thermopile two metals, in the dynamo, there is a difference in molecular stress in different parts of the magnetic field and so on, from which it follows that if there was but one kind of matter in the universe there could be no electricity, and second that the phenomenon called electrification is due to the molecules being thrown into abnormal positions, and the propagation from molecule to molecule by contact of this same abnormal position constitutes what is called a current of electricity. Heated matter loses its temperature by a process called radiation, a kind of motion in the ether. Radiant motions take place in straight lines, and unless there be molecules in their path they will continue on forever unless there be a boundary to the universe. The ether changes neither the direction or the character of the rays. An electrified mass of matter depends almost altogether upon the character of other bodies in the vicinity. Some can absorb these rays or lines of force as they are more generally called, and thereby they become electrified and this process is called electrifying by induction as distinguished from electrifying by conduction or contact. The velocity of propagation of this action in the ether is found to be the same as for light, showing that a disturbance in the ether travels with a velocity that does not depend upon its origin but upon the property of the ether to transmit motion. Again, when heated matter loses its temperature by radiation, the vibratory molecular motion is changed into an undulatory motion in the ether, a transformation in the kind of motion as well as a transfer to another medium, and it is not correct

to speak of heat rays. The ether is never heated, no matter how much energy there may be in it. Similarly the inductive lines or rays from an electrified body represent transformed electrical motions, and such effects of electricity ought not to be confounded with electricity. One difficulty that has been felt by many about the fluid hypothesis or any other, has been on account of the dual character known as positive and negative. That difficulty may be made to disappear by considering the character of the motion to be of the nature of a rotation. Imagine an endless rope as representing an electric circuit. At any point in it let it be twisted by the hands. It will be seen to have a right-handed twist traveling in one direction and a left-handed twist in the opposite direction, and each through the whole length of the rope, both co-existing without interference, yet nothing but simple rotation can be seen at any particular point. Call the right-handed rotation positive and the left-handed negative, and you have both an analogical phenomenon and the nomenclature. There is then no necessity for assuming either a fluid or anything more mysterious about electricity than there is about heat. These dynamical principles are not only a distinct gain to science, but they are of such a character as to give delight to the thoughtful man as a part of the riches of nature's warehouse of which Bacon speaks. They give to one the prospect of the order of nature and add to the sovereignty of man.

VIII.

THE EVOLUTION OF CHARACTER.

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In the great Natural History Museum in London, there are illustrations, collected from all lands, of the different forms of animal life, from the tiniest insect to the ichthyosaurus; and in all the halls of that vast and varied collection, there is but one representation of man himself. It is a sitting figure in marble of Charles Darwin. Many naturalists before him had investigated the phenomena of the animal kingdom, and sought to classify and describe its denizens; but to him it was given in a supreme degree to perceive the nature of animal and vegetable existence and to trace some of the laws of its development. Other men may have dealt skillfully with problems of more or less ephemeral or local interest; with this or that particular country, literature, religion, or other special region of inquiry; but it was Darwin's vocation to search out the nature of life itself—to inquire into the laws of being, of growth, and of development in the animal and vegetable world. And these are subjects of profound and universal interest. They appeal to the living sympathies, the imagina-

tion of all mankind and to the concern felt about the past and future of his race which characterizes, in various degrees, every intelligent being.

You are all probably familiar with the main items in the modern creed of evolution. Varieties and different species of animals and plants are not accounted for by the hypothesis of separate acts of creation, but are the product partly of the conditions of environment, and partly of natural selection. Certain organs and qualities become strengthened by exercise and more and more fully developed in successive generations; certain others become weakened by disuse, and gradually disappear or survive only in a rudimentary form. In the struggle for existence the weaker organisms are conquered, the stronger and the fitter prevail, and transmit their special qualities to posterity. Favorable variations in certain circumstances tend to be preserved and unfavorable to be destroyed, and the result of this struggle for existence is the formation from time to time of what are called new species and varieties.

Such are in briefest outline the generalizations to which the researches of biologists have at present led us. They may possibly be absorbed and superseded hereafter by some larger and more comprehensive inductions; but at present they are accepted by men of science at least as the best provisional hypothesis we possess for explaining the genesis of the various forms of organic life on the earth. And when once the student of Darwin's writings grasps the meaning of these simple statements, he begins to perceive that they are far-reaching, and applicable to many other departments of enquiry besides that

which concerns the lives of animals and plants. In Herbert Spencer's writings on sociology, you will find analogous methods of enquiry and of reasoning applied to the growth of laws and customs; to the history of institutions, to the development of our social and political life. These things have not been shaped by accident; they have not, so far as we can ascertain, had their forms consciously predetermined by any authority human or divine. They have become what they are by processes not unlike those which operate in the region of animated nature, by the conditions of existence, by climate, soil, circumstance; by the sort of motives which have determined the putting forth of energy; and by the direction in which that energy has exerted itself. Into this wide and fruitful region of speculation, we will not now attempt to travel. I am speaking to a body of teachers; and as teachers, the one subject of primary interest is the nature of the material on which they have to work—the mind, the character, the conduct of those whom they try to teach. And the question—the very limited and definite question—we have to ask is, What has the latest doctrine of scientific biology got to teach or to suggest to us? What analogies are there between the world of the naturalist and the world of the teacher? Can we get from the experience of the deep-sea explorer, of the physicist in his laboratory, or of the observer with his microscope, any practical counsels which will be of service to us in the manipulation of the finest piece of organism in the world, the character of a human being?

Before answering these questions we are con-

fronted with one consideration which may well make us pause. Analogy is very interesting, but it may prove very misleading. We are not to mistake resemblances for identity. There is at least one remarkable difference in the conditions under which the observant teacher and the observant naturalist must work. In the animal and vegetable worlds, the separate organs and functions are all susceptible more or less of separate observation and of separate treatment. True, even here, there is what Darwin calls the "law of concomitant variations," in virtue of which change in one part of a complex structure is accompanied by certain marked and often unexpected changes in other parts. And this law actually holds good in a far higher degree in the region of mind than in that of organic matter. We may talk of attention, of memory and of imagination as if they were separate faculties, and when we are discussing the nature of the human mind, we may easily make each faculty the subject of a separate effort of thought. But we cannot experiment upon them separately, or see them at work independently, as a surgeon can treat the eye or the ear, or as a biologist can deal with a seedling or a nerve. The powers and functions of the human mind are so interwoven, that you cannot in practice treat them apart, or strongly influence any one of them without exerting an important reflex influence upon others. And hence the need of some caution when we are tempted to push too far the analogy between what goes on in the hothouse, the zoölogical gardens or the biological laboratory, and what goes on in the nursery or the schoolroom.

Nevertheless when we have taken this precaution, there is one cardinal point of resemblance between the world of the naturalist and the world of the schoolmaster. We are safe in taking for certain this one truth that human character whether we look at it from its ethical or from its intellectual side is the result of growth and not of manufacture. It is a living organism, and not a highly delicate and curious machine. And if we can firmly grasp this truth, we shall find it full of useful suggestion. Nothing that you can do to your pupil is of any use unless it touches the springs of his life. You are concerned with what he *knows;* because every fact of truth which is actually received and assimilated, is capable of developing, becoming the germ of other knowledge and so of forming and strengthening his intellectual character. You are concerned with what he *does*; because every act is an exercise of power, and every such exercise of power helps to form a habit, and to make all future efforts of a similar kind easier and more probable. And you are concerned with what he *feels* because it is on his tastes and preferences, on what he likes and cares about, that his power of moral movement depends. Which of the influences which surround him shall ultimately prove most attractive and which of them he will resist—what in fact will be in his case the kind of natural selection which will control his future destiny must be determined in the long run by his likes and dislikes, by the strength and direction of such will-power as he possesses. In all these three ways the *life* of the human organism may be affected, and its future development may be aided. But observe, it

is necessary, if this is to be done, that your treatment shall go down deep enough to touch the secret of the life. A gardener cannot rear a variety of red flowers by painting the petals red, or by putting them under a strong red light. He must adopt quite other methods. And so if what your scholar *knows* is only impressed on him by authority, learned without interest, received without sympathy and accepted with the intention of remembering it only till the next examination, and forgetting it directly afterwards, it is not for any true purpose of development *known* at all. And if what your scholar *does* at your bidding is done reluctantly, done because you are looking, and not intended to be done again when the pressure of authority has been removed, the act has not helped to form a habit and has been of no service whatever in the development of character. So too a feeling or emotion in favor of what is right is of little or no formative value if it be merely transient. Unless it affects the permanent character of your scholar's tastes and several preferences it does nothing, and your labor in so far as you are seeking to form in him a strong and manly character, is absolutely thrown away.

That which is digested wholly, says Coleridge, and part of which is assimilated and part rejected, is food. That which is digested wholly and the whole of which is part assimilated and part rejected is medicine. That which is digested but not assimilated is poison. That which is neither digested nor assimilated is mere obstruction.

And this is as true in the spiritual and intellectual as in the physical organism. What is learned in

such a way that it is neither digested nor assimilated is not food at all, it is mere obstruction, there is no nutriment in it; its presence disturbs or deranges other healthy functions; it does nothing to recruit the life.

Now in the light of these general reflections, what have we to say of punishments. They affect conduct certainly. But conduct does not make character unless our acts become habitual, unless it comes to pass that certain forms of action are by degrees more natural to us, so to speak, than others. Single isolated acts have little or no influence on the character. It is the repeated act—the often repeated act, the act so often repeated that it becomes almost automatic and spontaneous, which alone can be said to shape the future life of the man, and to be reproduced in his posterity. We may well think of this if we try to inflict punishment. It may deter, it undoubtedly does deter from certain specific acts, so long as the fear of the punishment or the watchfulness of the person who inflicts it lasts. But the moment these are withdrawn, the motive for doing a given act disappears; and it is found that the punishment has never touched the inner life of the pupil at all; it has done nothing to shape the character it will assume and perpetuate in future. Nay, perhaps it has done something. It may have roused a spirit of rebellion and reaction, in consequence of which the kind of act which you have checked and punished, will become more habitual than before.

And what are we to say of the moral precepts, those broad general aphorisms about moral conduct, which fill so large a space in all good books, especially those

good books that are written for children? To us who are grown people, who have had some experience of life, much of that experience thus gathered up by careful induction, assumes the form of general propositions, maxims, rules of conduct. But of what avail are these to a little child? He has had none of this experience. He is concerned at present with specific acts, but large generalizations about principles of conduct do not affect him. Did you ever hear of a boy who was deterred from quarrelling because he had written "Cancel animosities" twenty times in his copy book? Do you think Laertes, in his green youth, was much impressed with the aphorisms of his pedantic old father,

> Give thy thoughts no tongue,
> Nor any unproportioned thought, his act?

Do you think that any child in a Sunday School becomes reverent and obedient because he learns by heart a formula enjoining him to "order himself lowly and reverently before his betters." The truth is that these universal maxims pre-suppose a riper age, and a larger experience, before they can be felt to have any validity, nay, before they have any meaning. A child knows something of individuals, and can understand something of his relations to them. But about humanity, about mankind as a whole, about the claims of society he neither knows nor cares. Nor can he, as a rule, appreciate large general rules of conduct or of human duty at all. I can think of only three conditions under which such general rules can influence his character at all. Those who enjoin them may follow them up by such a watchful supervision of specific acts, and by such guarded arrangements for prevent-

ing wrong doing, that in time it may become easier for the scholar to obey than to disobey, and the general law of conduct may fix itself on your pupil, not because he has learned it by heart, but because he has practised it by heart. There is a second condition on which is possible that a universal rule or precept may become operative. It is that in expressing it you have so appealed to the intelligence and the conscience of the child, so enabled him to see its meaning or its direct application that he recognizes its force, admires it, sympathizes with your motive in inculcating it, and makes up his mind that it will be well with him if through life he obeys it. The third possible condition under which a general maxim can be of use is that he who enforces it inspires so much affection and reverence, that without understanding it fully or seeing its bearing on conduct, the pupil accepts it as a matter of course. This is the sort of influence which leads a man to say in after life, "Ah, I remember my dear old master used to tell us, 'If you want not to be known to do a thing, don't do it.'" So general maxims of conduct may become impressed on a child by challenging his intelligence, his affection, or his experience. But if it comes to him in none of these three ways, if it is only urged on him by authority, committed to memory, and enforced as an abstract ethical truth, it simply comes to nothing. It may be very satisfactory to you to hear it accurately recited or to see it written down in a copy book. But it has no vital force, no value, and for the child at the beginning of life, scarcely any interest or meaning.

The bright audacious Shelley astonished his father

at nineteen by some startling expressions of heterodox opinion and by showing himself in flat rebellion against all the conventional beliefs and usages in which he had been brought up. His father insisted on making Percy read Paley's Evidences. When young Coleridge, in the fervor of his young republicanism, had just read Voltaire's Philosophical Dictionary, and declared himself converted, his schoolmaster, old Bowyer of Christ's Hospital, called him into his private room and gave him a thrashing. Can any one suppose for a moment that in either case the boy was tamed or convinced by such a measure? The medicine was utterly unadapted to the disorder. It was rejected. It left the patient heated, irritated and rebellious, farther from orthodoxy than ever.

And in seeking to ascertain for ourselves what forms of instruction and discipline are really operative upon the life of our pupils and carry in them the germs of future growth; and on the other hand what teaching it is that touches only the shell and husk of his being, and never penetrates to the sources of life at all, we do well to recur more often than we do to our own experience as learners. Those of you who are young teachers are not so far removed from childhood as to have lost the power to do this. Older teachers must supply the lapse of memory by imagination and experience. But in one way or another we should seek to put ourselves in the attitude of mind which is occupied by our pupils, to hear lessons with their ears and to see illustrations with their eyes. We are going, let us say, to give a lesson on some new fact in Natural History. We get together our whole formidable apparatus of black-board, pictures,

diagrams and specimens. But the testing question for ourselves is not—"How does the sketch of this lesson look in my notes or on the board? How will the lesson display my powers to the best advantage? In what light will it appear in the eyes of the head master, the inspector or the adult critic?" but "What should I have thought of this lesson when I was a child sitting on that bench? How would it have impressed me? How should I have liked it? How much of it should I have remembered or cared to remember?" In like manner, you are, it may be, going to select a piece of poetry for recitation. You are tempted to think first of its length, the appropriateness of its moral, the ease with which it may be explained, the sort of exercise it will give in elocution and in taste. But it will be well also to put the question "How far should I have been stimulated and enriched if, at that age, I had learned the same verses? Would they have remained in my memory now? Should I, at any time in the interval, have found my leisure brightened or my thoughts raised by remembering them?" That is a very valuable test. Understand as well as you can contrive to do, the learner's point of view, and criticise yourself from that point. Ah! if preacher and congregation, if teacher and class could change places now and then, and if those who sit before us could only frankly tell us what they are thinking of us and our teaching, what interesting revelations we should obtain! Perchance that look of dumb bewilderment and vacuity with which we sometimes find ourselves confronted, would, were it to shape itself into articulate utterance, be fain to find expression in some such words, as those once used

with a very different meaning: "Sir, thou hast nothing to draw with, and the well is deep."

Now one of the most important of the principles revealed in recent biological researches is the law of environment. New variations and new species of plants and animals are evolved, and the nature of their development is largely—though not wholly—determined by the conditions in which they live. Soil, light, climate, the nearness or distance from other bodies affect the growth of plants. The same conditions and many others affect that of animals,—whether there is an abundance or a scarcity of food within reach, whether the animal is in a wild or domesticated state, whether its habits are solitary or gregarious,—all these are circumstances which have to be regarded in explaining the evolution of new characteristics, or of new species. And it is manifest that similar considerations cannot be absent when we are trying to trace the development of human institutions or of human character. In all the ages, one of the problems of profoundest interest has always been "How far are man's character and destiny controlled by circumstances, and how far is it in his power to control them?" The Greek tragedians were continually trying to present this problem in new lights, and to invite their countrymen to reflect on it. You have an Orestes or an Œdipus impelled by a pitiless Fate to the commission of crimes which they abhorred, or a Prometheus enduring unmerited sufferings with heroic dignity, even though he knows that the man who is to deliver him is not yet born; and all the while the gods looking down with sublime impassiveness, or with a pity near akin to con-

tempt. The Greek hero has no alternative. He must either contend vainly against a remorseless fate, or must submit and show the world

> How sublime a thing it is
> To suffer and be strong.

Modern science and experience are presenting to us the same problem in a different form. Mr. Buckle has taken pains to demonstrate the uniformity of human action under given conditions. He shows you that the number of murders, of suicides, even the proportion of accidents and follies is curiously unvarying from year to year. He leaves on you the impression that, granted a certain set of conditions, man's action can pretty well be predicted, in fact that he cannot do otherwise than he does. Another philosopher expounds the doctrine of heredity, and shows how some people come into the world weighted with the effect of the follies and vices of their ancestors, and practically unable to fight the battle of life on fair terms with their competitors. Thus the conditions of man and of his environment come to be the substitute for the cruel Fate or Nemesis of Greek tragedy; and even as the Athenian was brought to the conviction that it was vain to war against the decrees of the high gods; so the man of the nineteenth century is driven by the sociologists to believe that his life and character are moulded by conditions which he did not make, that he, too, is the sport of Fate and of circumstance, and has no responsibility for either. At first sight this is the most disheartening of all conclusions. One is fain to rebel against it and to say, "I came into the world without my own consent. I did not choose my parents. I find my-

self encompassed by influences which are very unfavorable to the development of what is best in me, which are shaping me into something I do not approve and have not desired. I cannot fight against these conditions. I succumb to them, and must leave the responsibility to be borne elsewhere." But second thoughts will go far to modify these dispiriting conclusions. Grant that we and our children are the products to a large extent of the conditions under which we live. It is at least in our power to alter those conditions. Say that the amount of theft and of drunkenness is uniform under the existing social arrangements. Everything you do to make those arrangements better, by diminishing temptation, by increased vigilance in detecting crime,—every library you open, every good book you cheapen, every new form of innocent outlet you can find for the natural activity and restlessness which, in the absence of innocent exercise, takes the form of turbulence and vice, is a new factor in the problem, and makes the conditions of the life of the next generation more favorable than those of the present. Herein lie the solace and the inspiration of all true philanthropists. The character of our successors will be, let us admit, determined not so much by our wishes, nor by our exhortations. It will be largely the resultant of all the power and tendencies which will make up their environment, in short of the conditions which surround their life. Then let us improve those conditions. That at least is in our power to do to some extent, for society and for ourselves. Who can tell what effect the multiplication of good schools will have on the next generation? A young man finds

himself placed by the accident of his birth in the midst of uncongenial surroundings. He cannot wholly escape from them; but he can do something to alter them for the better. He attaches himself to a society in which there is a higher tone of thinking and of acting than his own. He joins a library, a reading party, or a field naturalist's club. By any one of these acts, he does in fact place himself in a new environment, and gives some of his better faculties a new chance for development.

And those who are teachers will do well to reflect often upon the way in which their pupils' character is unconsciously moulded by the sort of moral atmosphere which is breathed in a school. We inspectors and educational critics are sometimes laughed at for talking of the *tone* of a school. This is, we are told, an intangible entity, incapable of measurement, not to be set down in schedules or reports. That is very true. But the tone of a school is something very real nevertheless. It means, as I understand it, the prevailing spirit of the place, its cheerfulness, the mutual helpfulness of its members, its love of work, its orderly freedom; its well directed ambition, its scorn of meanness or subterfuge; the public opinion of an organized body of fellow-workers, all in their several degrees helping one another to fulfil the highest purposes of a school. The scholar who enters a community favorably conditioned in these respects, and who inhales its atmosphere, is in a training school of virtue and of self-knowledge, whatever may happen to be the subjects taught or professed in it. Years hence the man may indeed look back and say, I have forgotten every lesson I learned in that school

in the form in which I learned it; but I shall all my life feel grateful for the bright and encouraging example of the master, for the strenuous and honest spirit in which work was done, for the intellectual stimulus which the place afforded, for the high ideal of duty and of honor which dominated all its work. Let us who are teachers, now and then criticize ourselves and our schools from this point of view. Let us ask ourselves not only, What do these pupils learn, how do they succeed in examinations, what triumphs do they win? but also, What sort of influences are those which, though they work unconsciously, make the moral environment of a pupil in it, and which will determine his future growth?

Nor will such a teacher ever lose sight of the fact that the most important of the factors which make up this moral and spiritual environment is himself. The school is influenced not only by what he says and does, but by what he is, by his tastes, his preferences, his bearing, his courtesy, the breadth of his sympathy, the largeness and fullness of his life. These things are not talked about by himself or his pupils, but they are felt. So his first duty is to cultivate himself, to give full play to all that is best and worthiest in his character, before he can hope to cultivate others and bring out what is best and worthiest in them.

And this reminds us of what is, after all, the cardinal article in the Darwinian hypothesis—the doctrine of natural selection. Animals and plants are indeed influenced by surrounding conditions; but from among those conditions there is in almost every organism a selective power; so that the nature of the

growth is more influenced by some of those conditions than by others. A flower turns towards the light, a climbing plant stretches forth its tendrils in the direction in which strength and sustenance can be had. The organs of many an animal become in successive generations better and better adapted to its wants, by means of the selection from surrounding conditions, of those best fitted for its own needs and development. Slight variations of form, of structure, or of color occur from time to time; those of them which are most suitable and useful are accumulated and transmitted to successive generations; and it is found that those organisms which have been thus developed and improved have a better chance than others of a survival after the struggle for existence. Sometimes this natural selection operates in a mysterious way, almost automatically and without conscious volition at all. The woodpecker or the mistletoe undergoes variations by which its structure is gradually adapted to the various contingencies of its existence. In regard to the plumage of birds, the perpetuation of particular colors is due to something more like conscious preference, and is explained by Darwin's well-known phrase, sexual selection. But in the case of those organisms which are useful to man, there has often been intentional selection. The breed of race horses has been improved from time to time by the selection of the fleetest. The gardener finds out the character of the soil and other conditions best fitted to rear plants possessing the peculiar qualities which have the highest commercial value. He wants, for example, to find which varieties of peach will best resist mildew; what kinds of vine

culture are best fitted to withstand the deadly attack of the phylloxera, and with this view he tries various experiments in cross-fertilization and in culture. Darwin describes one very significant experiment tried with much success at the time of the prevalence of the potato disease. A farmer reared a great number of seedlings, exposed them all to infection, observed the effect, then ruthlessly destroyed all that suffered, saved those which succeeded best in resisting the infection, and then repeated the process. In this way, he believed it would be possible to rear a new variety of this vegetable which would resist the attacks of the fungus more successfully than any variety previously known.

Now to the innumerable phenomena of this kind in the world of the naturalist, is there anything analogous in the world with which you and I are chiefly concerned: the world of human experience and training? Much every way. It is certain that man's powers and faculties may, by due cultivation, be strengthened and transmitted to posterity. It is certain also that of the numerous conditions and circumstances that encompass a human life, some are favorable and some are unfavorable to the development of what is best in it; and that it is possible by the selection of what is favorable and the rejection of what is unfavorable, a people, a nation, a race, a single being may gradually improve. But what is more important than all, man is, so far as we know, the only being in the universe that knows anything of this law, or is able consciously to use his power of selection with a distinct moral purpose. I say "so far as we know," for it is right to be guarded here

against unverified assumptions. As Sydney Smith once said, "The lower animals are at a disadvantage, since they have no lecturers to discourse on our faculties." I wish they had. It would be worth something if we could have only five minutes insight into the interior of a dog's mind, and learn what view he takes of us, and of the universe. But in the absence of evidence to the contrary, we are at liberty to say that to man alone is it given to use the law of natural selection, with any real forecast of its meaning and tendency, and that while with the lower animals there is the struggle for mere existence, it is given only to him to struggle intentionally after a higher and better existence both for himself and for posterity.

Now let us view the bearing of these combinations on the development of human character, and especially on our own efforts after self-improvement. I speak in the presence of some young teachers, who have very recently taken upon themselves the perilous responsibility of managing their own life and fashioning their career. Well, you find yourself surrounded by a variety of conditions, and you know that some of them are favorable and that some are hostile to the development in you of that character which you wish to form. You are not bound to drift along in life, succumbing merely to the strongest and nearest of these conditions. It is at least in your power to choose by which of these you mean to be most influenced, and which of them it will be best to resist. You have access to many books. You will not read them all. But you know well that there are some books from the perusal of which you rise refreshed and strengthened, with higher aims and purer

resolutions; and there are others, from which you rise with a sense that you have been in a stifling, heated and unwholesome atmosphere, and which leave you with weakened faculties or a lower ideal of life. You are surrounded by acquaintances and associations. They are not of your making. You are not responsible for this environment. But you are responsible for the selection you make. Among those with whom you are thrown into contact, there are some whose influence you feel to be helpful and ennobling; in whose presence your best qualities are called out into exercise. There are others from whom you get no help, and in whose presence there is nothing to encourage your highest aspirations or your most strenuous efforts. It is by deliberately stretching forth the tendrils, so to speak, of your own nature and clinging to the best of what is within your reach, and shrinking from that which is worst, that you are able, as the Bible says, to "go from strength to strength;" and to make each step in life a new point of departure for your social and spiritual improvement. It is a trite thing to remind you of Shakespeare's well-worn comparison of the world to a stage, and ourselves, the men and women in it, to the players. But I do it for the purpose of quoting to you a remark of George Eliot which is not trite, but which seems to me to have a profound meaning. "How happy," she says, "is that man who is called on to play his part in the presence of an audience which habitually demands his best." Now among the surrounding conditions which determine the growth of a character, one of the most potent is the character of the audience before whom our work is done. Some

of us are compelled to do our work under the fierce light of public criticism, and others live and move in the midst of a sheltered and uncritical community. It is one of the special dangers of a teacher's calling that many hours of every day are necessarily passed by him in the presence of a young audience, which not only does not demand from him his best; but will often be very well content with his worst. We are not in this respect the masters of our own circumstances. But within certain limits, it is in our power to choose the witnesses of our own work; and unless some part of that work at least is performed under the eye of those who challenge the exercise of our best and highest powers, we may be sure that those powers will either be imperfectly exercised or not exercised at all.

For there is in Nature a law of degeneration working side by side with the law of development. An organ or a faculty may, by constant exercise, be strengthened and perpetuated; or by continuous neglect and disuse it may in time perish altogether. If you abstain for a time from the exercise of any power you possess, you find ere long that this power is well nigh incapable of exercise. There are in the human organism, as in that of many inferior creatures, traces and survivals of organs once active, but now existing only in a rudimentary state. I can, e. g., by an effort of will, move my eyelids and the skin of my forehead; but I cannot in like manner twitch or move the skin of the scalp at the back of my head. Yet there are traces of a muscular apparatus—the *panniculus carnosus*—by which other parts of the skin were moveable, and probably were moved by

some remote ancestor of mine. For centuries, however, my forefathers have failed to make use of this apparatus, and now it is practically dead. I could not bring it into play if I would. Now there is much that is analogous to this in the history of our own minds, and in the mental and spiritual phenomena around us. We sit down to read a novel or a newspaper. The eye glances hastily down the page. All that we want to gain we acquire in the most cursory way and without any consciousness of effort. Let us suppose we do this for a few days together, and that then we try to take in hand a book which demands real intellectual exertion. We are startled to discover that the power of concentrating the whole of one's mental force on one subject at a time, and of following the train of a difficult piece of argument seems for the time to have departed from us. At any rate we know well that it has been enfeebled for want of exercise, and that if we go on much longer, reading nothing but what is easy and agreeable, that power will perish altogether, beyond reach of recovery. Nature will not be trifled with. She gives us powers and faculties; but she does not undertake to keep them bright and vigorous and always fit for use. And the practical conclusion for all those who care about the regulation of their own minds is, take care that even in your miscellaneous reading there shall be some subject or some book which challenges the employment of all your best powers, and forces you to bring your whole strength to bear in understanding it, otherwise you will be doing injustice to your own faculties and slowly but surely reducing them to the rank of rudimentary organs in the ani-

mal structure; interesting but wholly worthless survivals of what once might have been potent instruments, but will never be so again.

So every power with which teachers are concerned, as a part of the organic equipment of their pupils, is constantly undergoing change in the direction either of development or deterioration. The process of evolution in a human character never stops. Attention, memory, observation and reasoning power, reverence, affection, aspiration after better things—all the attributes which you want to see exemplified in the life of your pupils, are day by day either enfeebled or strengthened by what happens in your school. You have, it may be, nothing in your course of studies which specially cultivates observation—the art of seeing carefully, noting resemblances and differences, and describing afterwards with perfect accuracy what has been seen. For all the higher purposes of education, it matters very little what kind of natural objects are selected with a view to the proper exercise of this faculty. Flowers in a field, trees in a forest, pictures in a gallery, statues in a cathedral, machines in a factory or shop windows in Broadway, would all serve the purpose, if only the power of seeing clearly, and of knowing well what had and what had not been seen were once encouraged. But a school course which includes no one item designed specially to cultivate this one faculty, is seriously deficient as a means of training, however much Latin or mathematics or other useful knowledge has been gained. The boy brought up in such a school suffers from the slow deterioration of his observant faculty, and becomes a less accurate and trustworthy person for the rest of his life.

There are no facts more familiar to the student of evolution than those which are grouped together by Darwin under what he calls the law of divergence. A plat of land will yield a greater weight if cropped with several species of grass than with one or two species only. "An organism becomes more perfect and more fitted to survive, when by division of labor the different functions of life are performed by different organs. In the same way a species becomes more efficient and better able to survive, when different sections of the species become differentiated so as to fulfil different functions. * * * "The more diversified the descendants from any one species become in structure, constitution and habit, by so much will they be better enabled to seize on many and widely diversified places in the polity of nature, and so be enabled to increase in numbers." (Origin of Species.) And in this respect the history of the human race has closely resembled that of animals and plants. "During the period in which the earth has been peopled, the human organism has grown more heterogeneous among the civilized natives of the species, and the species as a whole has been made more heterogeneous by the multiplication of races and the differentiation of these races from each other." (Herbert Spencer.) We may see this in comparing primitive and savage races with those which are more civilized. In the former, life is very monotonous. The men hunt and kill, they build huts all of one pattern, the women perform certain household duties, one day is like another; one family like another. But the whole tendency of civilization is towards diversity. New forms of human activity

and ambition, new kinds of buildings, new occupations, new interests come into view. The world becomes enriched by the multiplication of new types of character, of taste, of employment, and of intellectual life. Variation begets variation. I do not think that Tennyson's is a true forecast when he says that

"The individual withers and the world is more and more."

Uniformity, whether of manners, of pursuits, of conduct or of belief is not the goal towards which we are tending; nor, if we consider the matter rightly, is it the goal towards which we should wish to tend. The resources of Nature are not exhausted. In the moral and spiritual world, as in the world of outward nature, there is yet room for the development of new forms of beauty and of worthiness, far transcending any that have hitherto been known or even suspected.

Now in the light of this universal experience, consider for a moment what should be the attitude of a teacher's mind towards the scholars who surround him and towards their varied idiosyncrasies and types of character. Is he to think it a high triumph to be able to say, "The boys in my school or in my house are all of one mind. They all take an interest in my pet subject; they have all accepted my creed, they all have the *cachet*, the stamp of character which I admire most and which I sought to impress upon them?" That after all seems to me a poor sort of professional success. Subject of course to those general conditions as to instruction and discipline which apply to all scholars alike; the more varied the tastes, the aptitudes, and even the opinions of those scholars are, the better. With the voice of all nature as his guide, the wise schoolmaster will be less

anxious to enforce on his pupils *the* truth as he knows it than to encourage in them the habit of veracity, the spirit of honest enquiry; the openness and fairness of mind which will enable them to recognize and to welcome all truth, whatever form it may take, and even to discover new truths, hitherto unsuspected. The measure of his success and of the degree in which as a teacher he is enriching the world and posterity, is the amount of variation in the types of ability and goodness which are developed among his pupils. No doubt it is very pleasant and flattering to the natural man to find one's own favorite ideal of excellence reproduced in one's scholars. But the best teachers are those who recognize the fact that there are other possible forms of excellence not contemplated in their own programme, and who rejoice to find any new and unexpected manifestations of the presence of such powers.

I know how difficult it is for a hard worked teacher with a large class to concern himself much with the special aptitudes of individual scholars. I know how convenient it is to find all our good scholars good in our own way; and all our clever scholars clever in doing the work which we prescribe. Eccentricity, dreaminess, indulgence in fancies and in impossible ideals—these are apt to be troublesome phenomena to a teacher and to disturb his plans. But they may nevertheless be the very best part of the equipment of the young soul. They may perchance be indications of God-given power and genius, destined in their after fulfillment, to effect great ends, which are beyond our ken. We might be able to control them, but let us not discourage or repress them. One of

the most affectionate parents of whom history has preserved a record, once said, as you will remember, on an occasion on which her child seemed to be entering on a line of conduct which she had not planned for him, "Son, why hast thou thus dealt with us? behold, we have sought thee sorrowing." And then, as you know, came the grave and tender rebuke: "How is it that ye sought me? wist ye not that I must be about my Father's business?" "Our Father's business!" What boundless possibilities of hope and energy, of high endeavor and noble achievement are comprised in that simple phrase! How far its meaning transcends any conceivable programme of life which the wisest teacher or parent can devise!

The practical conclusion from these considerations is that we should try to give to each of the varied powers and aptitudes of pupils—whether they have been already disclosed or are yet latent—a good chance of healthy life. To this end a teacher has first of all to take care that his ordinary course of instruction includes for every scholar the rudiments of language, of mathematics, and of physical science, and some form of æsthetic or art culture; then as soon as special preference reveals itself, encourage the adoption—though not the exclusive adoption—of the chosen line. And for the rest, it is well to surround and supplement the school life with as many and varied encouragements to innocent and wholesome activity as possible. Athletic clubs, dramatic and musical societies, field excursions, a magazine, a workshop, a discussion class, a French conversation class, a sketching club—all these have their use; nearly all of them can easily be formed in a great

boarding school, and some of them are found to work admirably in day schools of every grade. Of course no boy will be attracted to them all; but every one of them is a legitimate outlet for the mental activity, and for the taste and natural preference of some pupil or other. We need not take too much pains to determine these preferences nor feel disheartened when even our favorite pupils are attracted most to those particular objects which seem to us to be least valuable or appropriate. Let us take care only that all the forms of intellectual activity which are placed within the reach of a pupil are in themselves healthy and free from evil, and then let the law of natural selection operate freely. Congratulate yourself when you find him showing a genuine interest in *any*thing. Despair only when you find him interested in nothing. For then indeed there must be some serious defect in your plans or your influence, and both need to be amended. We are safe at least in deducing this one conclusion from the teaching of natural history—that a human character, like other organisms, thrives best when exposed to variable conditions, for then only has it a chance of selecting those which are most favorable to the development of what is best and fittest for itself.

But while urging on you the duty of encouraging varieties of character and leaving full scope for the exercise of personal traits I would not have you try to stimulate eccentricity or to aim at the production of abnormal phenomena among your scholars. Monstrosities are nearly always sterile. A giant or a dwarf, or a two-headed nightingale is an amusing —nay even an interesting phenomenon, but he has

nothing to do with the development of the race. An Admirable Crichton, a John Stuart Mill, who could read Plato at eight, a George Bidder, the calculating boy, who could mentally extract the cube root of a line of ten figures are exceptional. They are not types which you desire to reproduce. *Natura non făcit saltum.* It is not by leaps and bounds, or by the occasional production of prodigies that the progress of the race is to be attained. It is the healthy, well-nurtured boy, enabled and helped by means of circumstance and training to become a little better than his father, who is most likely in his time to become the parent of something better still. It is disputed among naturalists, whether acquired qualities are transmissible by inheritance. But whether this is so or not in the domain of organic nature it is certainly true in the realm of the philosopher and the teacher; and in relation to human character. There is a sense in which all the scholars who come within the sphere of your influence may be regarded as your intellectual posterity. For they will certainly inherit from you, scarcely less than from their parents, attributes and tastes which consciously or unconsciously, will go far to mould the character of those who come after them.

And from this point of view the Darwinian hypothesis and all the facts which biologists have accumulated are full of illimitable promise for the future of the race, and of encouragement to the true and earnest teacher. It may be that within the period of the records of human history, there have been developed no new physical types, and that so far as animal life is concerned, we see no tendency to the production

of new species of humanity. Yet the law of evolution is visibly at work in the spiritual, the social, and the mental world. New forms of cerebral development, new types of goodness, wiser forms of philanthrophy, new triumphs over the material world, new insight into the moral world, greater knowledge of the forces which are at work around us, greater skill in the manipulation of these forces, broader sympathies, and truer conceptions of the brotherhood of man,—all these are possible. Towards all of these we are tending. And every earnest, faithful teacher in the world, however small the area of his work, however humble his sphere, is helping forward this process of evolution.

"Say not thou," says the Hebrew King, "what is the cause that the former days were better than these? for thou dost not enquire wisely concerning this." In the twilight of history, the outlines of many ugly things become softened, and some good things become magnified by distance. Much of insolence and brutality may have been sheltered under the name of chivalry; a helpless and ignorant acquiescence may easily have assumed the disguise of unity of faith. To an old man with a feeble imagination and strong self-love it seems natural that he should become a "*laudator temporis acti*;" should be impatient of modern movements; and underneath a general reluctance to change, should conceal an unexpressed conviction that a world in the shaping of which *he* can have no part, must necessarily be worse than its predecessor. But I believe that the most hopeful forecasts of the future are on the whole the truest. The wisest old men I know are not like

Carlyle and Ruskin, ever moaning over the degeneracy of the age, but those who believe that the world is visibly growing better; and that in the midst of many discouragements in details, the general march of events is steadily towards righteousness and intelligence, towards moral and social amelioration.

In this respect Charles Darwin differed widely from Carlyle and Ruskin. I have had opportunities of intercourse with all three of these eminent persons, and nothing could be more striking than the contrast between the deep gloom and hopelessness with which Carlyle and Ruskin regarded the tendencies of our age and the cheerful hope and faith in the future which marked all Darwin's utterances.

I know no more animating thought for a young man entering life and conscious of power than the reflection that he is not living for himself alone, but that all his own strivings after excellence and after a higher life, are distinct even though humble contributions to the improvement of the race to which he belongs. Every truth he learns, every sweet and graceful image which a poet may have helped him to harbor in his heart, every piece of good work he achieves, does something to alter for the better the conditions of life for those with whom he comes in contact. It helps to make the path of duty and of honorable ambition easier, safer, more accessible, more attractive to all who come after him. And perchance it may enable some of them to say years hence, "We are grateful for his memory. This world is a better world for us to live in because he lived in it."

DISCUSSION.

THOMAS CHASE, LL.D., late President of Haverford College, expressed his satisfaction with the extremely valuable and practical suggestions for the cultivation of character in schools which had been made by Dr. Fitch in his interesting address. He did not hesitate to say that the most important department of the teacher's work is the eduction and evocation of sound and noble personal character.

We need not be afraid of the word "evolution." Science has probably not said its last word on this subject, but it is quite possible to hold the doctrine of evolution in a theistic and a Christian sense. Whether we accept it or not, however, we may be grateful for the analogies Dr. Fitch has so skillfully drawn and from which he has thrown so much light on the path of moral education.

It is our part, as teachers, to help on the evolution of the good, the true, the lovely, the perfect, in the lives and habits of the young. I was pleased with a remark Mr. Tarbell made some ten days ago that "a great deal of our morality is habit." Now, teachers can do a great deal to aid in the formation of good habits and the repression of bad habits, and thus mould the future character. Ruskin says "the real education is to teach children to be clean, active, honest, and useful;" a modest list of virtues, one would say; but would not that be almost an ideal community in which, in consequence of universal education in good schools, no one was unclean, lazy, dishonest, or useless? But American teachers have a more ambitious moral programme than this. They aim, with a

fair measure of success, to inculcate and enforce habits of obedience, of respect for authority, of reverence for superiors, for the aged, for all sacred things, habits of punctuality, of order, of neatness, of attention, of thoroughness, of truthfulness, honor, cheerfulness, courtesy, regard for others, self-respect, and self-control. Patriotism, too, and, let me particularly emphasize, public spirit, can be evolved in young minds and hearts. I have seen *all* these good qualities evolved by good teachers.

Children sometimes come who seem to have stopped in their development at the monkey, some perhaps who have stopped at a fiercer or a meaner animal; but judicious guidance and control can help them to

> "Move upward, working out the beast,
> And let the ape and tiger die."

Evolutionists tell us that there is in nature a great law of *becoming*—becoming something more advanced and better—the law of constant progress in a continuous line. Such progress tens of thousands of teachers are promoting in our schools every day; and under their influence,—silent, almost imperceptible, but most potent—I trust that millions of pupils are growing to do right from the love of right, expecting every day to be a little better than the last, and making constant, even if slow, progress in a continuous line of moral improvement.

Scientists dwell on the potent influences of environment. It is only a part of these that the teacher can directly control or modify as regards the children and youth under his care—the influences of the school-room and the school-grounds. I need not particularize—for you all know—how much good can

be done and evil avoided by proper care in these. Let me speak of a single instance, however, of the importance of good environments. How often have judicious teachers improved the habits of a pupil by simply *changing his seat* and bringing him into new company. Readers of "Tom Brown at Rugby" will remember how Dr. Arnold put the young boy Arthur into Tom's study, "in the hope that when he had somebody to lean on him he would begin to stand a little steadier himself and get manliness and thoughtfulness;" an experiment which he watched to the end, and "with great satisfaction." I have no doubt that an actual occurrence is here described, itself only one among many similar successful experiments of the great Master of Rugby.

There are so many enlightened Christian homes in this country, that the influences of the environment at home are often wholesome and satisfactory. But there are, in these latter days, homes of which the very reverse must be said, and their number is constantly increasing, chiefly in consequence of immigration. Even as regards them, however, there is much that teachers can do; boys and girls may carry to the home circle something of the neatness and order they learn at school and something of the abhorrence of profanity and other vices which is imbibed in the refined atmosphere of a good school. It may be possible sometimes, also, for teachers to secure some outside advantages of good association for such pupils, or to aid them in their upward growth by occasional visits at their homes.

The survival of the fittest is a law which is illustrated at the graduation of almost any senior class at

school or college, when its list of members is compared with the same list at the beginning of the course. Imperfect organizations, whether intellectual or moral, have not survived, it is found, in the struggle for successful life at school. Herein, however, good teachers are less *merciless* than nature; and I think nothing in the world is more noble than the selfsacrificing patience with which many teachers bear with the weak and the vexatious, hoping—often not in vain—to awaken intelligence and moral sensibility.

There is great power for moral influence in what I may call the *machinery* of a great school. A boy will fall into line with others in instant obedience to your commands when he might be sullen and dilatory if called on simply by himself. As part of a great organization, his repugnance to good discipline is counteracted and overborne by the general good order. Habits of punctuality and thoroughness—essential parts of true honesty, and necessary to success in any occupation or station in life—are fostered by no agency more efficiently than by the entire discipline of school and college. Then certain respectful habits—as that of rising at the entrance of visitors to the school, are easily enforced when you are dealing with large numbers. The force of the public sentiment of a large school, moreover, is very great; and the skillful teacher will know how to enlist it on the side of good morals. Moral courage, manliness, the detestation of all meanness, and the good American virtues of self-respect and respect for the rights of others, are all re-enforced by sound public opinion, in school, as well as in the larger world.

"But how am I to go to work to give moral instruction," the inexperienced teacher may say. *Methods* will shape *themselves* if only the *earnest desire* is present that the moral influences of the school shall be wholesome and fruitful. There is less need for direct moral lessons, than for a moral influence underlying all the exercises of the school. History is a moral teacher. All science has its moral analogies. Literature above all, is instructive. The reading lessons and the declamations and recitations should be elevated in their tone and inspiriting in their influence. Again if any offence demands notice its moral character should be the consideration chiefly dwelt on. "What! has George told a *falsehood?*" "Has John been unkind to a boy *younger than himself?*"

Fellow Teachers, the power to mould the character of the next generation in a country which will soon hold a hundred millions of freemen, is a greater power than is held by any of the rulers of the world —greater than the power of Bismarck and the German Emperor—and this power lies in great measure in your hands. *Wield* it for the good of your country and of all mankind. Ours is a democracy which wishes not to pull down the high, but to raise the lowly. It levels upwards. Its aim has well been said to be to make the gentility of Sir Philip Sidney universal. The public schools are the chief instrument in this great work. We sometimes hear the slanderous charge, bred of ignorance and prejudice, if not of malice, that our public schools are Godless, and nurseries of vice. If this charge applies in any degree to any of our schools, the fault

lies chiefly in the *homes* from which the children come, or the want of success of the churches with the lowest class of the population. Such schools need teachers whose souls are on fire with zeal for the moral welfare of our children. Imagine a Dr. Nott or a Dr. Wayland holding the head-mastership of such a school. Would not his influence for good be felt immediately? Would he not speedily work out an entire revolution? But one need not be a Wayland or a Nott to succeed in such work. Let him love the children and ardently desire their highest welfare, and he will raise them and reform them.

But of our public schools in general it can truly be said that they are nurseries of sound morality and practical religion as well as good learning. Let us pledge ourselves that they shall become so more and more. The friends of virtue and education must not sleep, nor be slothful, if they would maintain and constantly improve that public school system which is the chief glory and the strongest bulwark of the republic. Let us show to the world, more fully than we have yet shown, that good habits, good character, good citizenship, practical religion, can be taught fruitfully and effectively in non-sectarian public schools. I believe this country will be true to herself and to the *right* on this great question, as she has proven herself on several other great and critical questions, when they have arisen.

I am happy to hear such sound, practical views on moral education as those of Dr. Fitch presented before the American Institute of Instruction, for it is most true, as was said by Pres. Hall, "that there have been few if any advances made along the whole

line of educational work which have not been previously presented, argued and urged, before or by this body"; and if the teachers here assembled are filled, as I am sure they are, with the right spirit, the moral welfare of the coming generation is secured. I believe, too, that this Institute is destined to last as long as the country lasts, and to continue to grapple successfully, as Mr. Walton has suggested, with the great educational problems which are with us and before us. Be not disheartened at the magnitude of the work. Our responsibility is always limited by the limits of our opportunity. The very word evolution suggests a gradual process, and should teach us patience.

The motto which hangs above us, "Not for a day only, but for all time," applies to our work in moulding character. It reminds one of words which I once heard uttered by Horace Mann: "The children of to-day are the men of to-morrow, the immortals of eternity." We are fitly overshadowed, too, by the national flag. Let it be the emblem of all our schools. "Its stars have lit the welkin dome, and all its hues were born in heaven." May our schools blend, in the characters they evolve, as that flag blends on its lovely folds, the blue of purity, the white of stainless integrity and honor, and the red of love—reverential love to God, and sympathetic brotherly love to man.

IX.

A TRIP AMONG THE GLACIERS.

BY HON. J. W. PATTERSON, LL.D., CONCORD, N. H.

If we go forth into our fields and pastures we see rocks and bowlders scattered promiscuously and in countless numbers, which have been transported from their original beds by some giant force which dominated the world in a primitive age, but unknown since the historic period. If in our northern latitudes we lay bare the flanks of the mountains, we find the underlying ledges all ground and polished by some powerful enginery of nature which has passed down their naked sides, plowing at intervals parallel furrows in their tough and unyielding surfaces. Everywhere over our northern hemisphere the Titanic workers of the olden time have dumped their mighty burdens of drift, above the stratified deposits of a yet earlier period, and the heterogeneous masses of mingled dirt, gravel and bowlders, found among our mountains and stretching east and west along our temperate zone, all point to a time when glaciers, like those of Greenland, moved over our continent and sent their mighty bergs into the sea. But whence came this power, and whither has it gone? is the question which naturally comes to every

lip. There are abundant reasons to believe that this glacial force is periodical, like so many other of the operations of nature.

Several theories have been propounded, at different times, to account for the periodicity of glacial action. Sir Charles Lyell thought glaciation resulted from variations in the amount and distribution of land and water. Another distinguished scientist finds the cause in the decrease of heat from the shifting of the earth's axis; and another still, from the loss of heat in the sun itself. But the theory of Croll, which accounts for the varying mean temperature of the earth by the revolution of the seasons around the earth's orbit and the changing eccentricity of the orbit itself, seems to be the most rational.

Winter at aphelion must be longer and colder than winter at perihelion, and the variation must increase with increase of the eccentricity of the orbit, and with the increase of the inclination of the axis of the earth to the plane of its orbit.

Our study of astronomy teaches us that the perihelion and aphelion have an annual motion of about 11.29″ from west to east, and that the equinoxes move in the opposite direction at the rate of about 50.24″ a year. The perihelion and the vernal equinox will therefore separate from each other at the rate of 61.53″, or, in round numbers, 62″ a year. If now we divide the number of seconds in the whole orbit of the earth by this number, we find that the vernal equinox, by its continuous precession, would make the entire revolution of the earth's orbit from perihelion to perihelion in about 21,000 years.

But the seasons move with the equinoxes. If,

therefore, winter occurs at perihelion at any given period, in 10,500 years it will occur when the earth is at aphelion, a distance from the sun of 3,000,000 of miles greater than when at perihelion. There are two reasons why the cold of the aphelion winter is more intense than that of the perihelion. In the first place the heat of the earth drawn from the sun, when received at the same angle, is inversely as the square of its distance. And in the second place the aphelion winter is longer than the perihelion by half a month, as the angular velocity of the earth's orbital motion varies inversely as the square of the sun's distance. It is contended that the change of temperature from this cause alone must give us a period of glaciation at each return of the aphelion winter. To this view it has been objected that the increased heat of the perihelion summer would melt the accumulated snows of our aphelion winter and prevent glaciation.

In reply, it has been contended that the rapid melting of the snows would remove the excessive heat and arrest the process of liquefaction. The heat would become latent, as at the vernal equinox, before its work of demolition had been completed, and so allow the snow and ice to accumulate from year to year.

We may accept this theory, but it will not account for the more stupendous results of glaciation—the wrecks of a primitive world—which we see scattered broadcast over the earth's surface. Those periods of incredible glacial force and devastation, could only have occurred when the extreme eccentricity of the earth's palpitating orbit, the lowest declination of the

tropics and the aphelion winter all fell together. Those periods occur only in hundreds of thousands of years, but the evidences of their past existence are to be seen in every clime and latitude.

Our modern glaciers are produced like the ancient, by a low temperature acting upon the moisture of the atmosphere.

My personal observation of glaciers was in 1873. One quiet September morning we left Lucerne, which nestles like a sleeping child, within the shadows of old Mount Pilatus, and taking steamer, glided down the lake of the four cantons to the foot of Rigi Culm. Thence we ascended the mountain by cars, and found ourselves on its grassy summit on one of the loveliest evenings of the season.

The atmosphere was so clear and translucent that the stars seemed to float just above our heads. Rigi stands in the center of a horizon studded with towering Alpine heights which form a circle three hundred miles in extent. As the sun went down the amphitheatre within slowly filled with a sea of mist which hid from view one of the sweetest scenes this world can give. We retired early, and at four in the morning were roused by the Alpine horn that we might come out and see the sun rise above the eastern mountains. Some four hundred persons stood in the cool mountain air, like so many eastern fire-worshipers, waiting for the coming glories of the new day. At first a narrow ribbon of gold was seen to thread the sky above the eastern mountains. Just then, turning to the right, we saw that Yungfrau had caught a wisp of glory and unfurled it like a banner over the valley. It dripped down like molten gold

till it touched Monch and Eigher, and crimsoned the Schnehorn and the Silberhorn with the roseate hues of morning. At last it touched the sea of mist that slept in the valley, and it rose up like a thing of life, into thousands of strange and beautiful forms. Next, a dazzling silvery radiance was reflected from the dome of a cathedral or the spire of a church. Soon we began to see the red tiles upon the house-tops, and at last the full orbed day poured through the valley revealing a landscape of wonderful beauty. Then for the first time, I saw fifty miles away, a web of dazzling snow which had been woven in the clouds and rolled far down the side of the mountain into the sunny valley below. Later, I saw the sun rise on this glacier at a nearer view, from the summit of the Lauberhorn, and also witnessed the rush and fall of two mighty avalanches of snow from the loaded sides of Yungfrau. But my closest study, and most exciting experience among the glaciers was at Chamouni.

Descending from Rigi on foot in the cool of the morning, we again took the steamer, and, passing by the historic chapel on Tell's Platte, the rock to which the hero is fabled to have leaped from the boat of the tyrant Gessler, we came to Flüelen. From here we rode to Altorf, the reputed home of Tell. On entering the village we passed a statue which represents Tell in the act of shooting an apple from the head of his son who was blindfolded and fastened to a lime tree a hundred and fifty rods away. A day or two later, I presumed to ask one of the towns' people if such a man as Tell ever lived. He indignantly repudiated the idea of his being a myth, and yet he never lived. Nay, I withdraw that; he has lived,

still lives and must forever live, one of those immortal beings born from the brain of genius and symbolizing the god-like heroism of a people struggling for liberty. Such men have a more real existence, and make a deeper impress upon human history, than the men of flesh and blood who living, cringe and crawl and skulk to their unremembered graves without a protest against oppression or an aspiration for a nobler manhood.

From here we passed on through Hospenthal to the Furca pass and reached the summit late in the evening. Early the next morning we began the descent, but soon came to an angle in the road where the Rhone glacier leaps down a steep precipice and is broken into stupendous blocks of ice, which atmospheric influences and the descending rains have slowly carved into pillars, spires and monuments whose azure faces glitter in the morning sunlight with the iridescent splendors of polished diamond. From this impressive sight we descended, by a zigzag course, to the foot of the glacier which spreads out like a fan at the base of the mountain as it passes out from the retaining gorge into the plain. Here the glacier is seamed with longitudinal cracks, resulting from the downward pressure of its own weight.

There is a passage which I have somewhere read in an old classic, which says that the river Rhone "rises in the cave of eternal night at the foot of the pillar of the sun." Here I learned its interpretation. From the foot of the glacier a stream rushes forth from a dark cavern formed in the melting ice. This is the initial Rhone rising in the cave of "eternal

night," and the glacier itself, climbing the mountain till it mingles with the imperishable snows above the clouds, is the "pillar of the sun."

After an hour's rest at the Rhone Glacier Hotel, we began the almost perpendicular ascent of the lofty Grimsel. At length, reaching the summit, we paused for a little, near the "dead lake," into whose peaceful waters, those who had fallen in a battle between the Austrians and French, near that spot, had been thrown, and then passed on to the head of the Handeck Falls where we spent the night in a filthy Swiss inn.

On beginning our tramp the next morning, we soon came to the falls and were deeply impressed with the strange beauty and weird grandeur of this marvelous work of nature. The river Aare springing from its icy cradle above, leaps from rock to rock till at length it gives a wild plunge into a deep gulf that yawns in the rifted mountain. The silvery waters of the Erlenbach, gliding over the lip of the precipice, mingle with the foaming torrent of the Aare and all is shattered into spray on its deep rocky bed. The muffled voice of this agony of waters is heard from below, and a purple mist rising from the dark pit catches the sunlight and lifts the bow of promise far up into the unvexed air of these mountain solitudes.

Descending from the Handeck I came, in the heat of the day, to a Swiss chalet, and sitting down in the shadow of its overhanging roof, the good woman of the house came out and asked me if I knew Agassiz. On receiving an affirmative answer she ran back and brought out a large Swiss watch which she had received as a present from him, doubtless for some

services rendered at the time he was studying the glaciers in that neighborhood under the auspices of the king of Prussia. She seemed delighted to hear of him, and I hoped to tell him of the incident, but the good man passed to his reward before I had an opportunity.

The following day I passed on foot over the Wengern Alps, stopping for a time at Grindelwald to examine the two glaciers which push down between the mountains at this place. These are like others of their kind except that the ice of the upper glacier is very pure and is used by an ice company to supply the market at Interlaken.

That night we slept on the little Scheideck at the foot of the Lauberhorn and felt the icy breath that swept down from the lofty summits that sentinel the encircling horizon. We rose at the call of an Alpine horn and crept slowly up into the oppressive silence of the Lauberhorn to feel again the beauty of the sunlight as it descended upon the domes of the upper air. We instinctively recalled the beautiful lines of Shakespeare,

> "Lo the morn in russet mantle clad,
> Trips through the dew of yon high eastern hill."

In this case the dew had frozen and accumulated to a great depth on the "eastern hills." Standing there in this silence that seemed palpable, we witnessed the rush of two avalanches of snow and ice as they plunged from the steep flanks of the Jungfrau into the depths below, and then pushing down into the valley of the Lauterbrunnen, we were confronted with the "dust-brook" or Staubbach. The stream which here falls a thousand feet from the ledge above

is dissipated into silvery spray by the resisting air, and on this veil of mist, floating over the dark face of the mountain, the tangled sunlight reveals an arch of beauty older than the flood and whose colors, mingled at the dawn of creation, still mock the deftest skill of human art. At the lower end of this valley, Interlaken, the quietest and loveliest of Swiss towns, stands on land built up by the débris which the Lütschine and the Lombach have poured into what was once, doubtless, a single lake at this point.

Having enjoyed for a few days the traditions and the scenery of this neighborhood, including the marvelous illumination of the Giessbach by interchangeable colored lights, we steamed down lake Thun in a thunder storm and hastened through the principal cities of Switzerland to the dark and isolated old castle of Chillon, in whose deep and noisome dungeon, Bonnivard, chained to a pillar, trod his maddening round for six mortal years. From this living death the immortal patriot was at last liberated by the hammers of an oppressed and maddened people. This venerable stronghold of the tyrants of the middle ages, is built upon a ledge which rises up in the lake some sixty yards from the shore, and is a characteristic monument of the civilization in which it had its origin.

The lake of Geneva, through which flows the river Rhone, fills the bed of an ancient glacier upon whose Titanic shoulders mighty granitic bowlders from the Mount Blanc system were borne across the valley of Switzerland and left upon the flanks of the Jura Alps.

Doubtless many of our own lakes, like Geneva, had

their birth in the receding glaciers. As a warmer epoch approached, the water from their melting sides mingling with the earth beneath produced a soft yielding mud which was poured over into the rivers by the downward pressure of the incalculable weight of the glaciers, and the glaciers themselves became lakes within their own beds. A part of the displaced earth remained and formed the restraining banks of the lakes, and a part, borne down by the current, was built into the intervals which were formed in descending steps as the barriers of the rivers were worn and broken down. Such plateaus are to be seen in most of our river valleys.

We rested for a few days in the scholastic city of Geneva, enjoying its memories and its scenes of great men and great events, and then hastened on to Chamouni. The day after reaching the valley, three of us Americans determined to make the ascent of Mount Blanc. Having secured five Swiss guides, we were accoutered according to directions with heavy shoes having sharp spikes in the soles and heels, and with buskins around our lower limbs. Each man was armed with a long Alpenstock having a strong steel spike in one end; the guides took with them an Alpen axe and a coil of strong rope with leathern belts attached at intervals of about eight feet apart. Thus prepared we started on our trip up the glacier. For a time the ascent was easy and we had little trouble. But after advancing some distance we began to encounter long cracks or fissures in the ice which we were obliged to leap. As we advanced, the openings or crevasses became wider and more hazardous to pass. At length we came to one

five feet wide and descending to an unknown depth. Our leader stopped and buckled one of the heavy belts about his waist, and passed the next to me. I fastened this about myself, and handed the third to the second guide, and he to the next and so on till we were all harnessed or roped together. Thus prepared, the foremost guide placed himself upon the edge of the crevasse and giving a spring, went over. We followed him in order till all were over. One of our number, a short, heavy man, failed in one instance of a secure landing on the upper side, but the rope was strong, and we hauled him up, hand over hand. We continued to repeat this operation, till at length we struck a crevasse some twenty feet wide. Here we found a ladder with heavy spikes in the lower end which one of the guides drove into the ice below the surface, and then dropping it on to the other side, let himself down to the ladder and ascended to the surface of the ice above. We all followed suit and were safely landed on the other side. So we continued to advance till we reached the Grands Mulets about four o'clock in the afternoon. Here, more than 10,000 feet above the sea we spent the night, intending to complete the ascent the following morning. But a thunder storm which followed us up the mountain covered the glacier with a veneering of glare ice, and rendered further advance extremely dangerous, so that the guides refused to lead us to the summit.

Reluctantly we turned back and crept cautiously down the mountain of fissured ice. At one point we reached a crevasse of five feet, with a narrow tongue of ice beyond and a second opening below that. This was a perilous spot and we watched our leader

with intense anxiety. Moving up to the edge, he cautiously cut a place for his foot with his Alpen axe and then, putting himself in position, gave a spring, and falling flat upon the ice, arrested his progress and awaited our coming one by one in the same manner. On reaching our hotel, we found the nervous strain had been a severe one, but were ready the next morning for the Mer de Glace. We went on foot, and without guides to the Montanvert and thence descended to the glacier which we crossed and recrossed and studied with great care.

The origin of glaciers is easily understood, but it is difficult to account satisfactorily for some of their phenomena. On the south side of the Alps we find the snow-line about 8000 feet above the sea. All moisture above this line it is evident must be condensed and reach the mountain surfaces as crystalized or granulated snow, or as hail. When the steep sides of these lofty heights become overloaded with snow, it pushes down of its own weight and sometimes descends three thousand feet below the frost line into the deep valleys below. The depth of the snow and ice will be measured by the depth of the valley, and may be from one hundred to fifteen hundred feet. The glacier terminates where the melting power of the heat below is balanced by the supply of snow and ice from the realm of cold above, and of course this glacial river will alternately advance and recede with the periodic changes of the mean temperature. What has already been said assumes that the glacier is in constant motion. The evidence of this is the observed steady movement of objects lying on the surface of the glacier. But objects near

the centre are seen to advance more rapidly than those near its sides, which are retarded by friction with its banks. Hence we infer that the movement is not in mass but molecular.

Various theories have been started to account for this motion. It has been said that the weight of the snow above and behind the glacier pushed it down the inclined plane on which it rests. Undoubtedly a force of this kind must exist, but if that were all it would advance as a solid block, which is not the fact.

Again, it has been contended that rains and melting snows percolating through the substance of the glacier, and then freezing, pushed it forward by the force of their expansion. But the glacier moves in winter when the ice does not melt, and in summer when it does not freeze.

Another has affirmed that ice, though brittle and seemingly unyielding, is plastic and gelatinous, and moves under pressure like tar and asphaltum.

Tyndall and Huxley rest a later theory upon an extended series of experiments and observations. Ice crushed into a granulated state if submitted to great pressure will readily take any desired form, and return to a solid and transparent condition.

So the glacier pressed by its own incalculable weight against an unyielding surface is ground up and made to assume the structure of its channel and to move forward like a viscous substance, and the very force which grinds it up restores it again to its transparent state.

We found the consistency of the Mer de Glace changed continually from the Seracs to the Chapeau. The snow at the source gradually took on a granula-

ted form, which the French call névé, and as it advanced downward to where it alternately melted and froze, it was transformed into blue, transparent ice. Whenever the glacier leaps suddenly downward in its track it is broken up by its own weight. The lateral crevasses are caused by the strain put upon the ice by the unequal movement of the sides and the centre of the glacier and as the cracks open at right angles to the line of greatest tension, they generally curve upward, the convexity being up the stream. During the heat of summer it is a common thing to see one or more brooks coursing along the surface of the glacier and dropping into fissures which they melt into the form of deep wells. This water passes down to the bottom of the glacier and mingling with the triturated rock which has been ground up by the friction between the ice and its bed, issues at the lower end in a turbid stream, which being drunk by the people produces the strong tendency to goitre, so common in some of the cantons.

Moraines are produced by the falling of dirt and stones from the cliffs upon the sides of the glacier. These are called lateral moraines, but where two glaciers unite to form a third, as in the case of the Mer de Glace, the lateral moraines combine and form a large medial moraine. The lateral and medial moraines are thrown together at the lower end of the glacier and constitute the terminal moraine. The moraines scattered over New England are the evidences of former glacial action in this part of the country.

Sometimes a large flat bowlder falling upon the ice prevents its melting beneath and we have the phenomenon of an ice pillar.

From Chamouni we went by the Tete Noire to Martigny and thence over the Great St. Bernard, spending a night with the pious monks, and on to Aosta, built and fortified by the Emperor Augustus as a closed gateway to the pass of the Alps. The city is beautifully located and is full of splendid memorials of the great Roman. From here we returned into Switzerland by the Matterjock Pass. This was the most dangerous and trying of all my trips among the glaciers. There had been a sleety snow storm which covered up the narrower fissures and twice we found by the constant use of our Alpen-stock that we were on the edge of one of these deep pits. A little later the foremost guide went down, but stretching out his arms as quick as thought, he saved himself and went safely to the other side, apparently without the least concern. At nine o'clock at night we struck *terra firma* and an hour later, found ourselves comfortably placed at Zermatt in one of the best hotels we had met in Switzerland. The next morning we climbed to the Gorner Grat by the way of the Riffelberg. Here the spirit of the mountains has done its grandest work. Standing more than 10,000 feet above the habitations of the toilers of the sea, you see the Rothhorn, the Weisshorn, Monte Rosa, the Matterhorn and other giant forms, lifting themselves still higher toward heaven, till their hoary heads are lost in the clouds.

The written word speaks of the hidings of infinite power, but here you stand silent and awe struck by the manifestations of a divine strength which has crumpled and hurled up the deep crust of the earth as though it were a web of gossamer. The exquisite

snowflakes fall upon your path and you think only of innocence and beauty, but there slumbers in their bosom the strength of God, which in its wrath crushes the mightiest works of men and buries his invincible navies in the depths of the sea. For man there is no place of safety but beneath the wings of infinite love.

X.

VOCAL MUSIC AS A BRANCH OF COMMON SCHOOL INSTRUCTION.

BY J. B. SHARLAND, INSTRUCTOR IN MUSIC IN THE PUBLIC SCHOOLS OF BOSTON.

Music, God's beautiful and ennobling gift to man, the pitch or sound of which come to us upon the breeze, and which the cunning of man in his christian progress has woven into the language of the emotions, is a theme to tax abler men than the one chosen on this occasion.

In the time of Mendelssohn the power of music to convey ideas, independent of written language, was proven through his "Songs without Words" now found in almost every cultivated home. Much earlier, in the time of Palistrina, proof of this power was given in the fact of written music to convey religious sentiment in place of the secular motive in use up to this time. The power of music as an educator, as a disciplinarian, as a comforter under all trials and tribulations, is thoroughly conceded by all thinking men and consequently needs no comment. The question is, how shall we impart this wonderful language to the young, how shall we make it applicable to the school-room and thereby spread this

blessing of our Heavenly Father throughout all this best of lands, where the poor and ignorant can always find opportunity to enlighten the mind, cultivate the heart, and lift the soul to God?

PITCH AND RHYTHM.

Music is God's own language, and he first gave to man the sounds, either high or low, which we call pitch. By following the natural way, or God's way, we shall make few mistakes. Let us begin by teaching pitch. Before proceeding with this exercise, I shall introduce the subject of Rhythm and for the best of reasons—because they belong together.

RHYTHM.

Let us still follow the never-failing law of the Almighty. With the pitch we have only the strong life without poetry or beauty. As man, according to the law of God, found the beauty and poetry of life in his partner, so must we join pitch with rhythm and keep them inseparable. I shall also introduce the subject of rote singing, which, together with the indispensable rhythm, will brighten the labor in the school-room, thereby giving relief, which young children always demand. With the young all the early work is necessarily of this character. Some propose that pitch can be taught without rote work, but, in my opinion, this is not correct; truly, too much rote work would be harmful, but too little would be equally destructive. Again, all those who disclaim work of this nature are found to use rote songs from necessity, since children cannot be kept on dry matter without something to relieve. Again, the rote song

is not unproductive; it gives the best opportunity for teaching rhythm, which is the soul of the art.

We find, then, that in rote singing a strong lesson in rhythm can be imparted, a pure tone can be inculcated, correct posture cultivated, together with a good habit for breathing. All this should be invariably taught before power of tone, which should be built upon the correctness of the previous indispensable matter. After conquering the above, due attention should be paid to articulation. This all-important study should be continuous through all the classes of any well-ordered school.

[Examples in Pitch, Rhythm, Recognition of Pitch, Writing the Pitch by a class of children. Examples in Rhythm, Boy and Drum. The Effect on a Manly Bearing. Causes of failure in teaching music coming under my experience.]

Special teachers are engaged to instruct pupils, when they should be engaged to instruct the regular teacher and through them, the pupils. Pupils instead of always singing and reciting in concert should be individualized both in singing and writing music, commencing with pitch and passing through all branches under this careful supervision. Incompetent teachers, musically incompetent, in charge of classes, are incapable of giving evidence of pure tone. All the teacher does the little child believes and copies, hence an error is inculcated which, in the life of the child, may not be wholly eradicated. In order to exercise the necessary care in this valuable study, more time should be given—30 minutes in a day is little enough; labor expended in this direc-

tion, will be found remunerative. The undivided attention necessary to good music exercise will prepare the mind for all other work, while the rod can be entirely abolished, since good music will destroy the necessity for its use. Good singing for fifteen minutes with any class will do more in this direction than one week without it—this I have proved by actual observation. [Relate circumstance.]

THE STUDY OF TIME IN MUSIC.

As incomplete as this paper must be in dealing with a subject of such proportions, it would be still more so, should I fail to connect the study of rhythm with the so-called study of time, all-important as it undoubtedly is in the art of music. In my opinion the failure to teach this branch successfully has more to do with poor reading than is usually supposed.

What is pitch worth without time? In fact, there is no such thing as reading music until the time is added. How shall we teach it? I answer, first, by rote, as in pitch and rhythm. Second, by measure, as any teacher would teach arithmetic. [Example.] Third, keep the time by the rhythmic point or point of accent. Beating with the hand will serve as a means to an end, but the accent must clinch the matter. No mechanical appliance will cause pupils to keep time; for this purpose the metronome is a failure and we must fall back upon the only sure foundation, viz., the intellect.

Teach first, division of measure, next the rhythmic point or point of accent, and all is done, provided a reasonable amount of time can be given for practice under a competent teacher.

Following the written part of Mr. Sharland's address came a blackboard exercise with the class in which he illustrated the principles he had already laid down. The exercise was a complete success and the readiness and promptness of the young people were remarkable. Mr. Sharland said that music should be pleasing and attractive. Dry music should be discarded. Every teacher should have his own way and the only thing required should be a reasonble result. "At present," said he, "we exact more from our children than is exacted from any musical society. On ten minutes a day it is proposed that the children shall learn to use fluently a strong language. Could it be done with French or German? It is ridiculous. When professional singers are asked to do anything of this sort, they refuse. Children should be asked to read only music which is reasonable for them; difficult music should not be given them."

XI.

GENIUS AND CIRCUMSTANCES IN EDUCATION.

BY A. E. WINSHIP, EDITOR OF THE JOURNAL OF EDUCATION, BOSTON.

The popular verdict is that nothing pays so well as genius except circumstances. A young man should pray every night for the elements of genius, and every morning for favoring circumstances. Genius is a capital thing to dream over, but favoring circumstances are comfortable companions to live with.

It makes all the difference in the world whether you take hold of the bee, or whether he takes hold of you. Circumstances alter cases.

Circumstances without genius are more useless, if possible, than genius without circumstances. Genius "cuts on the bias," places circumstances where they will do the most good. Men have not infrequently assumed that in proportion to their independence and disregard of circumstances was the height of their genius. Emerson sought systematically to ignore the use of times and seasons, he even criticised Homer and Milton because they linked their genius to the events of their times; but already Emerson's work, which I would be the last to undervalue, is suffering after the lapse of a decade, while

Milton's suffers not from the lapse of two centuries, nor Homer's from the lapse of thirty centuries.

Genius always touches the heart of humanity. Genius makes a significant impression upon its time for all time. Its reliability is as vital as its spontaneity; its energy as important as its exuberance; its unyielding patience is as significant as its inspiration. As much depends upon its focus as its fervor.

While a genius lives in his own times and seasons, he emphatically lives above and beyond them. A man known only in his own guild, appreciated and admired only by its members is not a genius. There is something lacking in his theory. The root-element of genius is not there. The poets who live have been those who were not servants of popular clamor; they have been the men who have lived in their time to project the best that was in it into all time. The poet who writes for poets is never a genius, never lives. Poets who are merely poet-praised are of little account.

Fortunately or unfortunately, genius is a rare quality. No city, state, or age has many geniuses. How many are there in Newport? How many among the members of this Institute? Boston's best known genius is John L. Sullivan. He is known in more lands, by more people, and has a higher financial rate set upon his genius, probably than any other man. To be sure, it is hardly delicacy of art that he represents; but there can be no question of its being classic,—for isn't it Roman? Grecian? English-you-know?

We paid Chicago last year, $10,000 for the privilege of importing Kelley, and this year $10,000 for the

privilege of importing Clarkson of base ball fame; and although they net the base ball management in the neighborhood of $100,000 a year, and although they may be geniuses in the art of losing and winning games, and though they are the best advertised men next to Sullivan, they are hardly a Boston product.

Study the directory, and the institutions; search the field of mechanics, science, art, and literature, and though there are some real geniuses, it must be admitted that genius is a rare quality even in Boston. It will be almost as difficult to name men whose greatness fruits from special circumstances. Even James A. Garfield with all his virtues, his intellectual strength, political sagacity, and statesmanlike qualities was very largely a creature of circumstances. We all understand how thoroughly his nomination to the presidency resulted from a combination of circumstances transpiring in a day,—and who dares say that his place in history will not depend upon the most fortunate event for his fame, the circumstance of time, and manner of his death. It is no disloyalty to the man so to speak.

Whatever be said or thought of the part circumstances have played in the life of President Cleveland, no one will question the part circumstances are playing in the life of Mrs. Cleveland.

The main work of the world is independent of both genius and especially favoring circumstances. Most men must make a little genius count for much, and a few favoring circumstances cover a multitude of sins. Most of the good we do, most of the honor, fame, and wealth we get, most of the skill of hand, power

of intellect, nobility of character, and beauty of disposition, most of the pleasure, joy, and grace of life must come through everyday affairs.

I have not chosen this subject for the purpose of discussing the conditions, methods, or relations of genius and circumstances, but rather to consider how we may make the best of both. Challenge it, if you please, but I venture the assertion that both genius and circumstances are creatable. I don't mean by this that it is possible to create a genius for everything, nor necessarily a first-class genius for anything.

There are three classes in society as there are in school, the stupid, the mediocre, and the talented. The stupid will amount to very little in the world, no matter how much schooling they have; the talented will amount to a good deal whether they have any schooling or not. No circumstances can thwart the purpose of a genuine genius. Franklin was almost totally unschooled; and two months covered Edison's entire school life; Mark Twain knew almost as little of school.

The educative work of the world, in school and out, has its highest hope, its greatest possibilities in that larger class of mediocre youth who may be made responsive to every educational influence. The chief mission of philanthropy and education is to reduce the number of stupid youth and increase the talented from whose ranks genius is drafted, and to give the mediocre class greater skill in the use of opportunities.

There are three *conditions* necessary for the education of the mediocre class—to apprehend the prob-

lems, to know what to use in their solution, and facility in such use. The trouble is that we teach too much and teach too few standards. I have asked hundreds of upper grammar, high and normal schools the distance from their own town to Louisville, Ky., and the answers invariably range from 300 to 3500 miles; but when they were asked the distance to New York, Savanah, Chicago, Denver, and San Francisco, they would use those five "yard sticks," swinging them over their maps mentally, and tell quite accurately the distance between any two points in the United States. To know five standards is worth more than to know fifty miscellaneous distances. With this thought in mind, the child wants to be taught how to face problems, how to teach them, and how to do it skillfully.

There are three *problems* to be solved, and most of the minor problems of life find their place in some of these. The first is the development of individuality, or, as Rosenkranz says, the actualizing of self, that is, independence, self-mastery. In every subject taught in school, in every new line of thought, the teacher should watch the child to see the dawning of its individuality, much as the mother watches for the first conscious smile of babyhood, and as the father watches helpfully for the first step. Genius has its root element in individuality, in that self-mastery, which gives a man supreme command of himself, that dares anything, not because of any superstitious reverence for some mysterious power such as abides in the fatality of some sign, tradition, or idol, not because of its rapturous enthusiasm over the possibilities of whatever he sets his hand to; but in ignoring

superstition and the wild ardor of fanaticism, he holds command of himself, and of circumstances. Genius finds its primal play in individuality. The more completely you develop individuality, the greater the probabilitiy of the development of genius, and every child should be so trained, should have such emphasis placed upon his individuality as to make him perfect master of himself, in order that every peculiarity shall have such freedom and vigor that if there be the faintest flush of genius it be encouraged.

The second problem is individuality transformed into humanity; or, in other words, the harmonizing of self with others. The development of individuality or the actualization of self, is, as it were, the athletics of education, the kindergarten of the school of life. The great aim of earnest effort is to put the emphasis, fervor, and intensity of individuality into harmony with the forces of the world.

In Chihuahua I have seen the market woman with a peck measure full of clackers—copper coins worth a little more than a cent and a half, sixty-four to the dollar—when given a dollar for seventy-five cents worth—forty-eight clackers,—count out of her measure the sixty-four clackers—one dollar's worth—and then count back into her measure the forty-eight due her, and then pass the purchaser his change, the sixteen remaining. That is individuality in arithmetic. As civilization comes, they will learn to subtract forty-eight from sixty-four without mental effort, and simply count the sixteen rather than as at present 64 + 48 or 112. The new process will be the result of individuality transformed into humanity in arithmetic. As in all subjects, intellectual, mechanical, liter-

ary, artistic, etc., the first requisite is the development of individuality, so in all these things this individuality must be transformed into harmony as a matter of economy, peace, and virtue. The school transforms individuality into humanity. The educated man has no trouble in making himself understood; he has an individuality in talking, reckoning, writing and spelling that is entirely intelligible to educated and uneducated; school education leads him to talk, reckon, write and spell according to the standards of mankind. The man who says "*It is they*" in place of *It is them*, surrenders his individual tendency to the standard of his fellows, just as the man who eats custard pie with a fork sacrifices his individual preferences for the knife to good manners.

The third problem is loyalty to destiny, or the appreciation and appropriation of circumstances, and resignation to uncontrollable circumstances. There can be no health, prosperity or peace, without this loyalty to destiny. The genuinely stupid have nothing to hope for through individuality, little to hope for through transformed individuality, everything to hope for from loyalty to destiny. In the parable of the steward the servant to whom the one talent was given may be ranked as stupid, he was not loyal to destiny, and the consequences were apparent. The talented have everything to hope for from individuality, but the profit of their genius depends upon transforming individuality into humanity. The man who invented the sewing machine to meet the need of womankind the world over, has a fortune that no invention from individual preference could render.

Individuality paves the way for genius, aids and strengthens those in whom genius is slightly developed; while loyalty to destiny, resignation to supreme laws, appreciation of that which is morally inevitable bears directly upon control of circumstances. When a man with or without genius must rise above and be master of circumstances, as he may be in the great majority of cases, there are combinations of circumstances which may be styled the logic of events which no tact, strength or foresight, can command. Education is incomplete however perfectly developed the individuality, however complete the harmony of life with the world, when there has not been acquired the serenity which comes from loyalty to destiny. As man broadens he seeks to free himself from external contingencies and leaves no effort unmade that can by any possibility contribute to such emancipation from circumstances; but he learns at the same time to have profound respect for the circumstances and events of his environment. Man is only free when he learns that emancipation from circumstances can only come from reconciliation with his lot. This reconciliation when every conceivable effort has been made is what I characterize loyalty to destiny.

As there are three classes, three conditions, three problems, so there are three institutions to aid in the solution of these problems, the home, the school, and the church. By the home I mean not only the family but all the social life and friendship that centers in the home; by the school I mean not only the mission of the school-room, but all the educational influences of literary and scientific publica-

tions; by the church I mean not simply the organization but all literature and platform efforts that harmonize with it. The home depends upon rhythm, affection, association, etiquette, custom. There is of course more or less of discipline, some teaching, but the most the child gets from the home is from that indefinable rhythm that molds and fashions his life. The school is primarily systematic, developing thought, imparting knowledge scientifically. The church develops motive in feeling, in thinking, in believing, in choosing.

The home yields to impulse; love is its ruling idea. We do what we want to do individually, but want to do that which love prompts. The school yields to reason, teaches the doing of what the judgment dictates; it teaches to weigh evidences, to be discreet, to study conclusions unmoved by impulse. The church yields to duty, assumes responsibility. Ought is its ruling word. Genius is developed by the rhythm of the home. The school teaches how to make the most of whatever genius we have and of the circumstances about us; the church teaches loyalty to destiny. The home is personal, the school national, the church is universal.

Everything in the home, done by the home, recognizes the supremacy of individuality. The business of life is to make and support the home. A man toils, plans, thinks for his home; the wife works, sacrifices, dreams for her family. The home monopolizes the business enterprise and manual endeavor of the parents. The church is supported by sacrifice as a luxury; neither home nor church is supported by requirement, the one is by love, the other by

duty. With the school it is different, it is supported by law as a matter of necessity. It costs a man who has no home, as much for the education of a community as though he had a wife and fifteen children; he does not educate his own children but the children of the State.

It will be seen, therefore, that the State makes no attempt to develop genius or secure loyalty to destiny. The school system cannot be utilized for the advantage of the genius. The home must see to it that genius is developed at private expense. No more can the school do that phase of character building which fruits from religion or loyalty to destiny. Private enterprise must provide for all special education which looks to the germination of the encouragement of genius, in mechanics, in art, in science, and in literature. For years the school system has been abused by attempting to use it for the development and encouragement of genius in literature and science; now it threatens to be abused by its use to develop and encourage genius in mechanics.

The work of the school is with the mediocre class, teaching reasonable ingenuity in the appreciation of problems, invention, or appropriation of the means for their solution, making the most of circumstances with the least loss of mental and moral energy when circumstances fail to play a favorable part in our activities.

XII.

MANUAL TRAINING.

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No phase of the history of civilization is more interesting than that which deals with the theory and practice of education. In the educational theory of an age we find the summation of its philosophy, in the educational practice, an epitome of its activities. The school is a microcosm and properly studied it will furnish us the clue to the proper estimation of the status of every problem that vexes a particular generation. It will not solve these problems, but it will tell us how their contemporaries tried to solve them. The reason for this is that the school is the point of contact between each generation and its successor. It is the only point at which one generation meets its successor systematically and with a definite purpose in view. And to the attainment of this purpose—the preparation of the rising generation to take its place in life—it brings all its best energies and all its ripest experience. There is much confusion in the popular mind between the end and the means of education, and this confusion effectually prevents any proper estimation of the

meaning and the lessons of educational history. Unless this confusion is removed it will be impossible to understand the latest development of pedagogic thought, the one which we are to consider briefly this morning.

The immediate end in all formal education is the development of the mind's powers and capacities. This end is always the same and is never absent. The means of education, on the other hand, are continually changing and depend upon two varying factors—our knowledge of the child's mind and the character of its environment. These two factors vary with the progress of knowledge and are not quite the same in two consecutive decades, probably wholly different in two consecutive centuries. The psychology of Descartes is not that of Aristotle, nor is the psychology of Locke that of Descartes: and neither Aristotle, Descartes or Locke approximated the knowledge of the workings of the human mind that we possess to-day. The changed conditions of practical life and the altered characteristics of civilization are even more marked than the advances in mental science. It is far easier to contrast than to compare the civilization of Greece at the time of Socrates, of England at the time of the Stuarts and that of the New World to-day. The magnitude of the changes and their rapidity do not admit of appropriate expression and defy the power of statistics to portray. It is plain, then, that the means of education,—what is sometimes called its content as distinguished from its form,—should and must vary to keep pace with our widening knowledge and our broadening and deepening civilization. Some difficulty is

found in making this argument plain, especially to teachers. They are quite unwilling very often to believe that the curriculum in which they themselves were trained and on which they are now actively at work, is not the best—or at all events good enough for an indefinite length of time. Many of them would doubtless be considerably surprised could they see clearly what changes are wrought almost annually. The course of study to-day in the common school is not what it was ten years ago, and any comparison between our school programmes and those of Horace Mann would exhibit a striking diversity. This diversity is even more marked in the manner of imparting the instruction than in the material imparted. The truth is that progress in this as in other matters, goes on without our knowing it and it is only after the lapse of considerable time that the visible effects of this progress engage our attention.

It would be a gross error for those who attach themselves to a new educational movement, to denounce preceding systems and conditions as misleading, worthless, bad. The most beautiful flower depends for its existence upon a clumsy and unattractive root. The flower loses its beauty and attractiveness if torn from the source of its life and strength. So it is with educational systems. The last makes the next possible, and the newest has quite enough to do without undertaking the profitless task of pointing out how all earlier systems would have failed had they been called upon to do something which in the nature of the case it was not possible for them to be called upon to do. Growth is continuous. Each

stage is necessary; and it is worse than useless to attempt to exalt any one at the expense of that which laid the basis for it. Each system and each theory of education may have been the best for its own time. It can not be fairly judged by the standards of a later period. All of these points must be borne in mind in coming to the consideration of the question, shall manual training be given a place in the school curriculum?—for that is the concrete form in which the latest development of educational thought presents itself to us.

The two phrases, "manual training" and "industrial education," the latter term being intended to signify an education which recognizes and includes manual training, are ambiguous and subject to serious misconstruction. It is a misfortune that no acceptable substitute for them has yet been found. Industrial education is an education in which the training of the pupil's powers of expression goes on side by side with the training of his receptive faculties, and in which the training of both is based on a knowledge of things and not of words merely. Industrial education is not technical education, though many persons confound the two. Technical education is a training in some particular trade, industry or set of trades or industries, with a view to fitting the pupil to pursue it or them as the means of gaining his livelihood. It is a special education, like that of the lawyer or the physician. It takes for granted a general education and builds upon it as a foundation. Industrial education on the other hand, is the foundation itself. It is the general and common training which underlies all instruction in par-

ticular techniques. It relies for its justification upon the nature of the human mind, its powers and capacities. It may fairly be asked, then, why if this is the case, is the word "industrial" used; why is not this general and fundamental training denominated simply education? Though the question is natural, the answer is plain. We cannot give the word education the signification intended, because at present, another and narrower signification attaches to the word. Education shifts its meaning continually to accord with the ideas of the age. To the Athenian it meant the pursuit of *kalon kâgathon*, music and gymnastic, were its characteristic elements. To the Roman, eloquence was an important and much esteemed attribute of culture. The preparation for life as an orator, therefore, is that which Cicero and Quintilian have in mind when they write of education. The ideal of early Christendom was the antithesis of that of the Greek. The latter urges the development of all the natural powers to their fullest strength and beauty. The early Christian insisted that the fall of man from God involved the consequent untrustworthiness and worthlessness of human nature. So instead of fostering the development of human impulses, the education of early Christendom hindered and endeavored to uproot them. This was what was meant by education in the Cloister Schools, and the products of the system were ascetics and monks. And so we might trace the history of educational theories to the present time and we should find it a continual illustration of the fact that education means something different at each stage of the world's progress. If, then, the argument for manual training

is as sound as I believe it to be, what we mean by industrial education to-day will be included in the concept of education as understood by the next generation. For the present, however, the prefixing of some adjective is necessary to mark the divergence. For this purpose the word "industrial" was unfortunately selected.

The manual training movement as we know it, is new. It was put upon a strictly scientific basis a very short time ago indeed. But it has been "in the air," as the saying is for a long time. Over two hundred and fifty years ago Comenius prescribed manual training as part of the true curriculum. The *Didactica Magna* contains specific directions concerning it. Locke, Rousseau and Fichte all emphasized manual training, though for different reasons. Locke agreed with Comenius and regarded it chiefly from the standpoint of its value in practical life. Rousseau and Fichte, however, saw that its influence on the growth of the pupil, mental as well as physical, was to be desired. Froebel in his Kindergarten reduced theory to practice, and in the Kindergarten all manual training as well as all rational and systematic education has its basis. But Froebel's work did not include the development of a scheme of manual training for older pupils. This was furnished many years later and from an unexpected quarter. M. Victor De La Vos, director of the Imperial Technical School of Moscow, took the initiatory step. His report, made at the Exposition in Philadelphia in 1876 and Paris in 1878, contains this passage: "In 1868 the school council considered it indispensable, in order to secure the systematic teaching of elementary practical work,

to separate entirely the school workshops from the mechanical works in which the orders for private individuals are executed. By the separation alone of the school workshops from the mechanical works the principal aim was, however, far from being attained. It was found necessary to work out such a method of teaching the elementary principles of mechanical art as, first, should demand the least possible length of time for their acquirement; secondly, should increase the facility of the supervision of the graded employment of pupils; thirdly, should impart to the study of practical work the character of a sound, systematic acquirement of knowledge; and fourthly, should facilitate the demonstration of the progress of every pupil at stated times."

This Russian experiment was made known to the people of the United States in 1876, by Prof. John D. Runkle, then President of the Massachusetts Institute of Technology. In his annual report for 1876 Prof. Runkle gave an elaborate account of the Russian system and pointed out its application to the work of the institution over which he presided. In consequence a school of Mechanic Arts was added to the equipment of the Institute. In 1879 the St. Louis Manual Training School was organized, and the subject of manual training was formally put before American educators for investigation and criticism. Both the Boston and the St. Louis experiments, however, only suggested the real question at issue—they did little or nothing to solve it. They made it plain that for boys of high school age manual instruction could be devised that would be practical yet disciplinary, educational not technical.

The next step was to recognize the unity of principle which underlay the Kindergarten at one end of the educational scheme and the manual training school at the other. It was observed that both recognized the activities and the expressive powers as well as the receptivities and assimilative powers. It was seen that the Kindergarten and the manual training school were evidences of one and the same educational movement, though appearing at different points on the line. The observation of investigators was then directed to schools of the grades commonly known as primary and grammar, in order to determine whether or not their curricula were organized in accordance with the principle in question. It was soon found that they were not, and it then remained to be decided whether the application of the principle extended to them, or whether for some peculiar reason it could not be applied there. When this stage was reached the very essence of the manual training movement was involved. If it was based on a pedagogic principle and if that principle was sound, then manual training must be placed in schools of every grade. This question has now been fully answered. The manual training movement is based on a sound pedagogic principle and manual training must be introduced into schools of every grade. To the statement and brief elucidation of that principle we may now turn.

In the first place, let me remind you of the distinction already made between the end and the means of education; that the one, the development of the mental faculties, is always the same, but that the second varies according to our knowledge of the

child's mind and the changing character of its environment. The manual training which is to be introduced into the school must accord with the end of education and also be abreast of the present requirements of the means of education.

It is objected as to the first that manual training is not mental training, but simply the development of skill in the use of certain implements. This is bad common sense and worse psychology. Manual training is mental training through the hand and eye just as the study of history is mental training through the memory and other powers. There is something incongruous and almost paradoxical in the fact that while education is professedly based upon psychology and psychology has ever since Locke been emphasizing the importance of the senses in the development of mental activity, nevertheless sense-training is accorded but a narrow corner in the school-room, and even that grudgingly. Industrial education is a protest against this mental oligarchy, the rule of a few faculties. It is a demand for mental democracy in which each power of mind, even the humblest, shall be permitted to occupy the place that is its due. It is truly and strictly psychological. In view of the prevalent misconception on this point, too much stress cannot be laid upon the fact that manual training, as we use the term, is mental training. What does it matter that the muscles of the arm and hand be well nourished and perfectly developed, that the nerves be intact and healthy, if the mind that directs, controls and uses them be wanting? What is it that models the graceful form and strikes the true blow, the muscles or the mind? Do the retina and optic

nerve see, or does the mind? It is the mind that feels and fashions and the mind that sees; the hand and the eye are the instruments that it uses. The argument for manual training returns to this point again and again not only because it is essential to a comprehension of what is meant by manual training, but because it furnishes the ground for the contention that manual training should be introduced into the public schools. No one with any appreciation of what our public school system is and why it exists, would for a moment suggest that it be used to train apprentices for any trade or for all trades. It is not the business of the public school to turn out draughtsmen, or carpenters, or metal-workers, or cooks, or seamstresses, or modellers. Its aim is to send out boys and girls that are well and harmoniously trained, to take their part in life. It is because manual training contributes to this end that it is advocated. We will all admit, indeed I will distinctly claim, that the boy who has passed through the curriculum which includes manual training will make a better carpenter, a better draughtsman, or a better metal-worker than he who has not had the benefit of that training. But it is also true that he will make a better lawyer, a better physician, a better clergyman, a better teacher, a better merchant—should he elect to follow any one of those honorable callings—and all for the same reason; namely, that he is a better equipped and more thoroughly educated man than his fellow in whose preparation manual training is not included. Therefore manual training is in accord with the aim of education.

We may accept such psychological postulates as

we will, yet for educational purposes we may agree that the mental powers are roughly divisible into two classes, the receptive and the expressive or active. By means of the former, the child is put in possession of new facts, and by means of the second he makes these facts his own and uses them in practical life. As food will not nourish unless assimilated, so knowledge, or mental food, is not really knowledge, is not really possessed, until we have so gained control of it as to be able to express or use it. The power of expression, therefore, is a very important adjunct of the power of reception. Man can express his mental states or ideas by the use of language, by gesture, by delineation and by construction. Of all these modes, language is the most difficult, the most abstract, the latest acquired. When carried to any great degree of fluency and accuracy, it is universally considered an accomplishment. Yet in the ordinary school-room it reigns supreme, and the other modes of expression are passed over as if they did not exist. The argument for manual training insists that each of these modes of expression must be considered and that for the training of each a method must be devised.

It is hardly more than half a century since Sir Charles Bell discovered that the nerves which carry impulses out from the brain to the muscles are wholly distinct from those which carry stimuli in to the brain. For twenty-five years researches have been making in cerebral and nervous physiology that have revolutionized mental science. The dependence of mind on body, the relation of the various mental powers to each other and the importance of the distinction be-

tween the in-taking and the out-going powers of the brain are now recognized as they never were before. Naturally we expect to see these scientific conclusions reflected in any course of study which is abreast of them.

It is essential both in the powers of reception and in the powers of expression that the child deal with things and objects and not alone with what some one has said or written about things. Education from the Rennaissance until Pestalozzi, despite the protests of a Ratke or a Comenius, did not recognize this principle. It taught words and words only, Rousseau, Pestalozzi, Froebel and the hundreds of humble teachers whom they inspired, burst these verbal bonds and inaugurated that training of the receptive powers, now almost universal, by which the pupil sees things, touches things, handles things, and is not held at arm's length by the interposition of words. This is the philosophy of the object lesson and it is because of this sound, scientific reason for its existence that it has become permanently established in the school-room. While this wonderful improvement in the training of the receptive faculties was making, the active or expressive faculties were left to shift for themselves. When we examine the ordinary course of study with reference to this point we find that the powers of expression by delineation and construction are entirely overlooked. Reading and writing are the only studies in the traditional group that train expression and they are wholly inadequate; and until very recently they were taught in such a way that they lost most of their disciplinary value. But even when well taught they are not ade-

quate to the full demands of the mental powers of expression, for they rarely occupy more than ten per cent. of the school time, except in the very lowest primary grades. Furthermore they must be supplemented in another direction if the active powers are to be trained as they should be. The advocates of manual training come forward and demonstrate that their scheme of instruction will adequately and properly train the powers of expression. The powers of expression by delineation and construction are trained by the reciprocal instruction in drawing and in constructive work. It is proved that the boy who can draw a cube or he who can carve or mold one from wood or clay, knows more that is worth knowing about the cube than he who can merely repeat its geometrical definition.

Because of this psychological and practical soundness of manual training, the argument in its favor calls for the remodelling of the present curriculum. Manual training cannot be added as an appendix to any other study; it must enter on a plane with the rest. It is suggested that much time now wasted could be saved by better methods of teaching, that logical puzzles over which so much time is now spent be eliminated from arithmetic, that spelling be taught in conjunction with writing and history in conjunction with reading. The time thus saved is to be appropriated in about equal parts to drawing and constructive work, both together to occupy from one-quarter to one-third of the pupil's time. Drawing lies at the basis of all manual training and is to be taught in every grade as a means of expression of thought, only incidentally as an art. The construc-

tive work is in material adapted to the child's age and powers. It is at first in paper and pasteboard, then in clay, then in wood, and finally, in the academic grades, in metal. These means are so far as our present experience goes the best ones for the training desired. But wider experience and deeper insight may alter or improve them at any time, just as our readers, our spellers and our arithmetics have been improved.

The curriculum which includes manual training, in addition to meeting the demands of our present knowledge of the pupil's mind and its proper training, is better suited to prepare the child for life than that curriculum which does not include it. The school is to lay the foundation for intelligent citizenship, and as the conditions of intelligent citizenship change with the advance of civilization, the course of study must change in order to adapt itself to these new conditions. No one who can read the lessons of history will assert that the ideally educated man is always the same. Greek education sought beauty, mental and physical; monastic education sought asceticism and a soul dead to the world; Rennaissance education sought classical culture and minute acquaintance with the literatures of Greece and Rome; modern education has broadened this conception of culture until it embraces the modern literatures and natural science; common school education in the United States in these closing years of the nineteenth century has broadened its idea yet further, and is now demanding that the pupil be so trained that the great, busy life of which he is so soon to form a part be not altogether strange to him when he enters it.

It demands practicality. It demands reality. It demands that the observation, the judgment and the executive faculty be trained at school as well as the memory and the reason. Despite the fact that the three former are the most important faculties that the human mind possesses, it is astounding how completely they are overlooked in the ordinary course of study. You will remember that Henry George tells of a bright girl, thirteen years of age, about to graduate from a grammar school, who had no conception that the back-yard of her father's homestead was a part of the surface of the earth that she had studied about in geography. She knew how thick the earth's crust was, she knew how it was formed, she could recite by rote a dozen more or less important facts concerning it—but she did not know it when she saw it. A professor in a normal school in a neighboring state lately took occasion to examine a new class of students averaging sixteen years of age, in order to determine the value of their judgment as to distance. I will read his own report of the test:

"In order to ascertain how well our public school course fits pupils for any actual, accurate work in life, I asked a class of seventy-four (74) in the State Normal School to do about the easiest thing that I could think of, viz;—measure the width of my class room. Our pupils come from all sections of the state, city and country, are all necessarily over 15 years old, have passed our entrance examination, or have finished the prescribed course in the public schools and have received a certificate from the superintendent.

They all used the same yard stick as a measuring rod. No directions at all were given, the rod was not

even called a yard stick; it was marked off and numbered in inches, though the word inch was not on it.

But one student was allowed in the room at a time, and all comparison of results was forbidden. As soon as the pupil had finished measuring the room, he wrote his answer on a little slip of paper and then dropped it into a locked box kept for the purpose.

Notwithstanding the fact that the same rule was used in every case, the results varied more than 300 feet, the lowest answer being 10 ft., 10½ in.; the highest 350 ft.; 36 of the pupils had answers within one inch of the true result, which was 31 ft., 1 in.; 9 of them made errors in the number of times they used the rule in crossing the room; 4 of them making it 9 instead of 10 times; 4 others calling it 11 times, while one called it 13 times.

At least one of the pupils considered an inch a foot; while two others thought the whole yard stick but a foot."

This simply means that these pupils had been taught words, not things. They knew that twelve inches made a foot and could rattle off the tables with surprising glibness. But of what a foot really is, they had not the dimmest idea. Manual training would correct this by bringing the pupils into contact with objects. It would so familiarize them with objects in all their details and points of interest that mistakes like these would be impossible. It would have them draw, sew, cut, saw and plane in order to appeal to the faculties now so neglected. The executive faculty will be trained by the handling of material and the applying it to specific purposes without waste or loss of time. The judgment and the

faculty of careful and accurate observation will be continually exercised in the process.

At certain stages of civilization and national development there is a natural training of the expressive or active powers which through desultory, is by no means ineffective. I refer to the training which is the result of an active, out-of-door life, especially in rural districts. The country boy receives this training in the hundred and one small occupations about the farm and the old-time mechanic's son obtained it in his father's shop. The conditions which once made this natural training available for a large proportion of the rising generation are now altered, and the alteration goes on year by year, with increasing rapidity. We must bear in mind the growth of large cities and our unprecedented commercial and industrial development. The specialization of labor has destroyed one of the above mentioned possibilities, and the growth of great cities is rapidly removing the other. When our first national census was taken in 1790 only 1-30 of our population lived in cities having more than 8000 inhabitants, and there were only six such cities in the country. Their total population was scarcely more than that of Albany to-day. At the present time we have over 320 such cities and their inhabitants number almost 30 per cent. of our total population. This fact has a most important bearing on practical life and thus on the public school. We must remember also that between 1850 and 1880 our manufactured product increased in value 550 per cent., and the number of those employed in factories increased 325 per cent. This, when interpreted, means that indefinitely more peo-

ple than ever before have to employ their observation, their judgment and their executive faculty, and employ them accurately, in the performance of their daily duties. For them—and through them—and for all of us—the conditions of practical life have changed and are changing. Has the school responded to the new burdens thus laid upon it? The argument for manual training says no, it has not. A more comprehensive, a broader, a more practical training is necessary.

There is a further argument for manual training, but I have not touched upon it because I desire to place the subject before you from a strictly educational standpoint and according to the requirements of a rigorous pedagogic method. If we permit other than educational considerations to enter into the discussion of questions purely educational, we may be setting a bad precedent. Having premised this, it will not be amiss to refer briefly to the social and economic arguments in favor of manual training.

It is unquestionable that many of our social troubles originate in misunderstandings about labor and in false judgments as to what labor really is. They originate, I take it, from the same misunderstanding that causes the average young man to think it more honorable to add columns of figures for $3.00 a week than to lay bricks for $3.00 a day. Some of us affect to despise manual labor. It must be because we do not understand it. It must be apparent that if manual training is accorded its proper place in education, if we come to see that manual work has in it a valuable disciplinary and educational element, our eyes will be opened as to its real dignity and men will

cease to regard it as beneath them and their children. This is what I would call the social argument for manual training. The economic argument is similar. It points out that the vast majority of our public school children must earn their living with their hands, and therefore if the school can aid them in using their hands it is putting just so much bread and butter into their mouths. Now I have no sympathy with the purely utilitarian conception of the school, with what we may call the dollars and cents idea of education. On the contrary I cordially endorse the pungent aphorism of Dr. Munger: "Education is to teach us how to live, not how to make a living." But while standing firmly on that platform, I do say that if the best and most complete education happens to aid a boy in earning his living that is no reason why it should be supplanted by something less thorough and less complete. The movement which would place manual training in the school course has commended itself to the ablest and most thoughtful educators all over the world. I do not recall a single name of the first rank that is in opposition. Huxley and Magnus in England, Sluys in Belgium, Bréal and Salicis in France, Salomon in Sweden, Paulsen and Goetze in Germany, Hannak in Austria, Seidel in Switzerland, and Gabrielli and Borgna in Italy, are leading the thought of their respective countries on this subject. In Sweden, in France, in Germany and in the United States, professional schools for teachers are expounding the philosophy of manual training and the methods of teaching it, together with their other subjects of instruction. More than two score of the most pro-

gressive cities of this country are placing manual training in their public schools as fast as the means at their command will permit. Successful private schools in New York City, St. Paul, Louisville, and elsewhere are doing the same thing. In twenty-five of our States and Territories manual training of some kind is taught in some manner. No one who saw the magnificent exhibit of manual training work at the last meeting of the National Educational Association at Chicago, will ever forget it. It marked a progress and a thoroughness that were inspiring.

A movement at once so philosophical and so far-reaching as that in favor of manual training, has not come into educational thought since Comenius burst the bonds of mediævalism two and a half centuries ago. It is the educational question of the time. Other matters are important as affecting administration, organization, methods of teaching, and other details—all having to do with the applications of principle, but the manual training movement is a principle itself. As might have been predicted, it meets with no little opposition and considerable misrepresentation. The forces of conservatism are arrayed against it as something new; and it is, doubtless, well that it is so, for education is altogether too important a matter to be swayed by any and every crude theory. Any new movement to establish itself in education must run a gauntlet of opposition and criticism, the safe passage of which is a guarantee of excellence. This gauntlet manual training has successfully run, and it is to-day the newest phase of educational thought. In the first place it is a deduction from our increasingly complete and exact knowl-

edge of mind, and in the second place it meets the demands for a more practical education made by the conditions of contemporary life. It so happens, and happily, that the education which our increased scientific knowledge points us to as the best, is more practical, in the best sense of that much abused word, than that which it supersedes.

DISCUSSION.

Mr. C. E. Meleney, Superintendent of Schools, Somerville, Mass.—It is unnecessary for me to discuss the argument for manual training. That has already been done,—ably done. You must be convinced that the argument is based on the true principles of education. You see that the two sets of powers, those of knowing and those of doing, claim equal attention in education; that in acquiring knowledge as well as acquiring skill, expression is as important in training as acquisition. I am well enough acquainted with Dr. Butler, to know that he would leave nothing more for me to say on this subject, unless it should be something of practice from my own experience, consequently I shall be satisfied if I can, in the ten minutes allotted to me, make one point in favor of manual training. What I have to say is the result of my own observation and experience. Demands for the establishment of manual training courses have come from many directions. I present to you to-day the argument as based upon the *demand* of the *child himself* for a feature in education that can satisfy the *dominant element* of his

nature,—activity. The child is constantly *busy*, he wants to see everything, handle everything, arrange everything and represent everything. The impulse to do, to make something, is intuitive, every child is born with this desire and it must be satisfied. It is as natural as it is to breathe. A profound text book on philosophy begins with the sentence, "Man is a lazy animal." We all know that this is not true. Whoever saw a lazy child unless made so by the training it received or by inheritance from parents who had been made so by their training. I admit that this activity will die out unless it is satisfied with material and opportunity to gratify it. It will become laziness, and "man will become a lazy animal," not by nature, but by neglect of training, or bad training. This is my argument for manual training. Give the child a chance to satisfy his natural desire and he will become a *worker*, a *student*, a *philosopher*. This idea carries with it the other part of my argument, *that the opportunity must be given early* and maintained during the whole course. I will not say that it is too late to begin the training after a child has passed through the grammar school, but I will say that he runs great risk of becoming lazy before he reaches the manual training school, and that wonderful opportunities are lost to a youth who has not had a chance to exercise his skill during the years of his childhood.

This activity takes the form of play. This play, if profitably directed becomes occupation and develops into industry. It is hardly necessary for me to bring proof of what I say; every teacher knows that the only trouble in school comes from the fact that the

children can't be given enough to do, that is, of the right kind. It is easy to give them enough and more than enough of what they do not want to do and ought not to be required to do. The wise teacher finds out what a boy *wants to do* and *likes to do* and directs this to his education. The old way, I admit, was to find out what the boy did not want to do and punish him if he didn't do it. That was education, I suppose. Did you ever try it? Or did you ever have it tried on you?

Every teacher in a primary school feels the need of putting into the hands of the children some kind of material with which to busy them, and every wide awake teacher has collected sticks, pegs, beads, buttons, blocks and what not, to keep the children busy. Such teachers are applauded and prized; school committees are after them. The children *must do* something, they cannot study all the time, who can? Require a child to study five hours a day! Or even four hours! It cannot be done. They can *pretend* to and deceive you and themselves. What is the moral effect of such imposition? I once visited a primary school where the children had not been to school a month. The teacher was hearing a large class say their letters and because they didn't know them, she sent them all to their seats in shame and mortification and told them to "*study* them." Study them! Think of it! Study their A B C's! Was that the "New Education?" But they slunk away and made believe. What else could they do? I have seen the effect of using material properly in primary grades and I know there is interest and delight for the children and inspiration for the teacher. I

could bring many to testify to it. I have seen boys and girls become aroused and eager to do in Grammar Schools, when given things to do in connection with Geography, History, Arithmetic and other studies. Does not every child want to draw? I have seen boys thoroughly interested in the wood working room and the only moral danger in connection with it was in the case of a boy who called himself 14 when he was only 13½, for the sake of getting a chance to put on his apron and go with his class. Yes, I have even seen High School boys thoroughly absorbed in making their plan at the bench, more anxious to make their wood or metal true to their idea than they ever were to translate their Latin correctly. Now why is this? It is because every child loves to work, wants to do something, and these powers and impulses must be satisfied. Do you say this is not learning, not intellectual training? Nobody could say so who has seen the operation. Every one who has observed and every teacher will testify that these occupations whether of construction or drawing require no effort on the part of the teacher to compel attention, while there is no other work of the school that does not require the almost constant urging of the teacher to compel attention to the study. It is because of the natural tendency and impulse of the child. Do you say that we should not allow the child to do what he wants to do? It is by *cultivating his tastes, his desires, directing his inclinations and tendencies* that we make him a *doer*, a *student*, and eventually get him to do what, may be, he did not want to do. Is that based upon the "true philosophy of instruction?" I think it is.

Now I believe this impulse of the child may become a *wonderful power in education* if properly directed. The first educator to realize the importance of it and to direct it as an educational force was FROEBEL, and the *first systematic use* of *material* for *instruction* and *expression* to develop all the powers of the child was in the Kindergarten. I said a moment ago that every live teacher of the youngest pupils puts material into the hands of the children and is commended by the school committee. But do you know that very many of the same committeemen and many of the same teachers do not favor the kindergarten and would not have it introduced? Why? Because they know nothing or little about it. Prejudice, that is all. Why these sticks, pegs, splints, miscellaneous blocks, etc., are only the "*crumbs* that fall" from the kindergarten table, and are our children *dogs* that they should only have the crumbs? Which is better, to put into our primary classes a whole lot of miscellaneous articles that have no particular relation to each other, and allow the children to "make what they like," or to use *material expressly prepared* for *instruction*, *arranged* in *systematic gifts* and *occupations*, and used by a *trained teacher* who understands the nature of the child and the method of instruction, and who can direct the little worker with definite ends in view. If the former is good, how much better is system, and trained, experienced teachers. The kindergarten system satisfies the child's desire to *learn* and *to do*. The material is arranged and graded according to his wants and powers. With it, he *acquires all* the *knowledge* he *needs* or is capable of acquiring and he

puts into form all he learns. He gives expression to all his ideas. He is a *discoverer* and a *creator.* This is the most perfect system of manual training ever devised or discovered and it is a type of what a manual training system ought to be in any grade, that is: every grade should furnish the *appropriate knowledge* and the *means* of expression suitable to the powers of the pupils of such grade, just as the kindergarten does. For instance, while paper or clay as means of expression may be suitable for the little child, the youth may need harder materials, as wood or metal, and while the fingers of the child are strong enough to manipulate and change the form of material in the Kindergarten and Primary School, the youth in the Manual Training School would require tools. As the powers of acquisition and expression grow, the course should change in its *methods* and *appliances* to satisfy the *growing demands* of the *growing child.* The manual training course is intended to furnish these modes and means of expression for all grades of school, through systems of *drawing* and *construction,* which I need not here describe. The usual school course provides for the acquisition of knowledge and for expression in language, oral and written, and in some instances by means of drawing, but this is not enough as you have already seen. People who have become skillful in the use of material have acquired their skill after leaving school, by happy fortune having enjoyed opportunities that made their training possible, and they have usually left school at an early age. These talents must be exercised early in life or they may never be of service.

All children in their normal state, possess the *germs* of *power*. These germs need exercise to bring them into action. If the appropriate stimuli are not applied at the right time, the *opportunity* is *lost* and the power can never be developed. Every genius the world ever saw, showed early indication of the power within him, fortunate circumstances made the development of the power possible. Many people have shown early indication of genius, but have been suppressed, the germs have been allowed to wither and have become extinct from disuse. It has been asserted by those who oppose manual training that there will be opportunity enough after school is finished for children to develop these talents if their inclinations lead them to such employment. But the facts are that there are *not such opportunities.* The boy *seldom has a taste* for employment and *if he has* any inclination to use his hands, he does *not know* in what *lines* he will be most likely to succeed. Why should a boy be *left to chance* for the proper exercise of his talents? *How many establishments* are there where a boy can receive systematic instruction that will properly train his powers. Why leave him to sink or swim?

There is *something wrong* in education when so *many boys* leave *school* without *any* idea of what they would like to do, and when their *teachers cannot tell* for what occupation they are fitted. Why should not the education develop all the powers of a child and indicate his leading tendencies? If there are talents that have not been exercised by our educational system why not change the system? If a *system* cannot do it, how is *chance* going to do it? The

majority thus left to chance never find their opportunity.

The manual training that is demanded is that which is fundamental, which will cultivate the native powers of every boy whatever occupation or profession he may undertake. We should go just *so far* as the training will meet the *necessities* of *every child.* No one can deny this. We have as much right to *go further* than this and give instruction and training that *will prepare* a *boy* for *mechanical pursuits* as we have to train for commercial occupation or for professional life. Why has bookkeeping become such a prominent study in Grammar and High Schools, and why is so much of the arithmetic devoted to business operations if not to fit pupils for commercial pursuits? Our system of education has all been directed to the needs of those who are to graduate. Everything has led up to the college. What right have we to prepare boys for college and not prepare them for the *great industries* of life that occupy such a large proportion of the people of our country? We *have a right to go* as far in *industrial education* as in *commercial* or in *classical* education. Who denies it?

Supt. S. T. Dutton, of New Haven.—Mr. President, only through manual training can the great laws of natural selection and differentiation take effect. Only by those laws can the public school system be made to reach every child and secure the largest and broadest evolution of character. I think there has been no greater discovery in the nineteenth century than this, that the manual arts can be so

taught as to be thoroughly educational and to violate no rules of pedagogy, and I am thankful to-day that I see public sentiment crystallizing in favor of this movement. I need not detain you at the close of this long exercise, and after this able address, to bring forward further arguments in favor of manual training. Let me briefly inquire what we may expect to see in the immediate future as the result of this new education. We shall see, in the first place, a sort of fertilization of our whole school system, not a revolution, but a gradual reformation. We shall see teachers everywhere learning what teaching is. We shall see them learning lessons from the effect which manual training has upon those who are engaged in it, and we shall see them carrying into their teaching the same principles. We shall see arithmetic simplified and brought closely into connection with the business of the world, vitalized and made more useful. We shall see the teaching of language conducted upon a better plan. There will be a larger, richer and more ample use of language in the schools. We shall see the windows of the soul opened to all those scientific subjects which offer such a delightful, suitable field of study to children.

Secondly, we shall see the school becoming a brighter and more delightful place for children. Through these activities of which we are speaking, all idleness will be dispelled. There will be a different atmosphere, the whole training will be different, seeing that the schools will be radically changed by these innovations.

Thirdly, what I regard perhaps as important as

anything, we shall be able to remove that charge which stands against the public school system, that it is a partial failure because it does not reach that large class of children in our cities who come under the general head of neglected, vagrant and truant. It seems to me, teachers, there is something to carry from this meeting. Instead of setting our teeth against manual training, and bracing ourselves to resist it, let us inquire whether there is not something for us to learn. Those children toward whom teachers feel, and, perhaps, justly many times, that the best thing for them is to be out of school, and if they leave school regard it as a kind of dispensation of Providence, should be taught with the feeling that there is moral power enough in our improved education to save them. And if we study what has been accomplished, even in England in industrial schools and in the reform of prison systems, we can see that there is moral power enough in this system of manual training to help a very large class of children. It comes under the head of the economical phase of this subject which has been spoken of, and what can be more economical than to save those children who are ignorant and in danger of becoming criminals? I am willing to work for them and willing to give the experiment a full trial. [Applause.]

Fourthly and lastly, we shall see, I think, a larger and better sympathy between the home and the school. We must not expect that parents will at once recognize and appreciate that unseen spiritual influence which is coming from manual training. But we may expect them to apprehend the practical results which come from it at once. These results

will be recognized when they see their children largely interested in the industrial arts and in domestic affairs, when they see labor dignified and elevated to its proper place, and the home cherished and made more beautiful. I say that at school and at home we shall see the children work better than they ever have done. We live in a peculiar age of progress and we may hope by manual training to accomplish for the cause of education greater things than we have dreamed of.

I hope most sincerely that we shall be able, during this discussion, to hear something from Dr. Fitch, particularly upon this point. We were very much interested in what he said yesterday. I should like to hear him speak upon the particular point which we are discussing now.

Dr. J. G. Fitch, of London, said that the arguments in favor of a fuller recognition of the importance of manual training in schools had been clearly and forcibly put by Dr. Butler. In England, children from five to seven years of age were generally taught in separate infant schools or departments, and up to the year 1880 almost the only legal requirements for such schools were that the children should be taught the rudiments of reading, writing, and arithmetic. At least an elementary examination in those three arts was the chief test of efficiency. In 1881, when the code was recast, the requirements were made to include not only simple lessons on objects and on the phenomena of nature and of common life, but the varied and interesting manual employments usually known as the kindergarten gifts

and games. Two facts came clearly into view after seven years' experience of this change: first, that the happiness of the little ones and the attractiveness of the school to them and their parents were greatly increased, and next that the children of seven or eight years of age who had passed through this discipline were even more proficient in reading, writing and arithmetic than other children who had been kept to those subjects only. Hence, thoughtful educators in England as well as in America were led to consider, as Dr. Butler had done, whether this same principle might not with advantage be carried further and manual training duly graduated and adapted to the growing powers of the scholar might not be continued concurrently with other studies all through the school course. If this is to be done to any real educational purpose it must not be by substituting manual for intellectual work, but by harmonizing the two in such a way that each should help the other. A great mistake would be made by treating technical instruction merely as a means of obtaining greater industrial skill and adding to commercial prosperity. The education of the eye and of the fingers should be accompanied from the first by the training of the intelligence, otherwise merely to turn boys out of the school into the workshop would be a retrograde and not a forward educational movement.

Remarks of Prof. J. C. Greenough.—Mr. President, the subject of manual training has been presented in the paper before us more clearly in its proper phase than is customary at our educational gatherings. If manual training is to find a perma-

nent place in our schools it must be something more than a means of fitting for employment. It must be wisely used as a means of developing manhood. Everything in the school-room depends for its value upon the relation it holds to the true object of education. This question is blindly discussed because some men think it is the business of the schools to make workmen and they are demanding in our cities that the boys be taught in the common schools to work with their hands because they want them to run their factories and do manual work. Those of us who understand what education is must contend against this error and demand that the appliances of practical education shall be employed in the public school as a means of developing manhood and no further. We must recognize that it is wrong to deceive a boy with the idea that skill in carpentering is in itself an education or that skill in the moulding of iron is in itself an education. We are to instruct him that such work has educational value only as a means of developing the powers God has given us. So far we are working to-day and there is not a school in this land but is demanding that its students shall be taught to observe and to gain a knowledge of things by the use of their senses. There is not a school to-day, worthy of rank among progressive schools, that would take the material objects out of the hands of its pupils or would not have its students construct with blackboard and pencil the forms that they have gained knowledge of in their primary lessons. I approve of all that has been said this morning in reference to the correct method of instruction. Let this manual instruction go on, not

to train the pupil for productive employment, but as a means of making men.

Mr. E. S. Kellogg, of New York City, was the last speaker of the forenoon and he emphasized the need of manual training. He related the experience of the government school at Albany, thirty years ago, for the education of the young men of the Six Nations of Indians, showing how utterly it failed on the old fashioned theory of education, and said that in the new method of manual training we have at last found a way by which the Indians can be educated and now, for the first time, we are properly fitted for settling the Indian problem. He also told of an interview with Thurlow Weed and of the strong opposition of that busy veteran to the college system of educating men, on account of its failure to adapt them to the real work of life. To illustrate the other side, he told of a carpenter who worked for him, who was a very poor scholar, but a most excellent carpenter and a thorough business man. He warmly approved the system of manual training on the ground that it supplied a great lack in the practical development of the school children of to-day.